
eMINTS-4-Utah Evaluation

FINAL REPORT

**OFFICE OF SOCIAL AND ECONOMIC DATA ANALYSIS
UNIVERSITY OF MISSOURI – COLUMBIA**
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Introduction

The policy goal of the eMINTS-4-Utah evaluation was to determine the efficacy of the eMINTS program in narrowing the achievement gap between students in Title I schools and other Utah students. Districts participating in the initiative selected the eMINTS program based on prior success in narrowing the gap in educational achievement between Title I and non-Title I students as evidenced by prior research in Missouri and other states.

In order to affirm these same benefits were accruing for Utah students and to inform policy decisions related to continuation and expansion of the eMINTS-4-Utah program at the district and state levels, efficacy was defined as a statistically significant increase in the percent of students scoring proficiently when enrolled in eMINTS classrooms as compared to their peers in non-eMINTS classrooms in buildings participating in the initiative. Specifically, four key policy questions were addressed:

- Does participation in eMINTS classrooms increase student learning in Title I buildings?
- In buildings with eMINTS programs, do students in eMINTS classrooms attain higher levels of proficiency than students in non-eMINTS classroom?
- Give the interrelationships between eMINTS participation and the educationally-important student demographic factors associated with the Title I program, do eMINTS students attain higher levels of proficiency than non-eMINTS students controlling for racial group, free and reduced lunch eligibility, limited English proficiency, and special education status?
- Do significant interaction effects exist between eMINTS status and demographic factors by test subject?

The evaluation was commissioned by the eMINTS-4-Utah consortium of five districts, Granite, Salt Lake City, Ogden, Duchesne, and Tintic. The Office of Social and Economic Data Analysis at the University of Missouri was selected to complete the evaluation based on its previous experience in evaluating programs of the eMINTS National Center¹.

¹ See <http://www.emints.org/evaluation/reports/index.shtml>

eMINTS-4-Utah Background

The eMINTS-4-Utah program is based on the professional-development and technology-distribution program designed by the eMINTS National Center and is funded through competitive federal Title IID funds under the Enhancing Education through Technology (EETT) program. The eMINTS-4-Utah program serves 18 schools in five Utah school districts. Among the 18 schools are 12 elementary schools, five middle schools and one high school. The eMINTS-4-Utah program has established eMINTS classrooms or classes in grades 3 through 10. Due to the small number of 3rd grade classrooms and data reliability issues with the secondary school data, the focus of this analysis is primarily of 4th through 6th grade outcomes.

The eMINTS-4-Utah program is a full-scale implementation of the eMINTS hardware suite and professional-development sequence. The eMINTS-4-Utah program has outfitted each of its classrooms with a high-lumen projector, an interactive whiteboard, a teacher workstation, printers, digital cameras and sufficient student computers to facilitate a high level of student access to the Internet. eMINTS-4-Utah teachers considered in this analysis have completed the full two-year eMINTS professional-development sequence. Utah-based instructors, working in consultation with eMINTS cluster instructional specialists (CISs) based in Missouri, conducted the professional-development training.

The schools and teachers participating in the initial cohort of the eMINTS-4-Utah program began their professional development sessions in the autumn of the 2003-2004 school year and completed these sessions at the end of the 2004-2005 school year. The following analysis is based on the 2005 administration of the Utah UPASS standardized tests and provides information about student performance and teacher instructional practices at the conclusion of the two-year professional-development sequence. At the administration of the 2005 UPASS tests in April 2005 eMINTS teachers had completed approximately all of the 200 hours of the eMINTS professional-development program² and students had worked in an eMINTS environment for a minimum of the 2004-2005 school year.

Plan of the Document

The report is organized in three sections: a descriptive overview of the districts and students measured in the evaluation. An analysis of proficiency level outcomes as well as an analysis of scale score outcomes on the 2005 Utah UPASS CRT tests by eMINTS status and by race and ethnicity, free and reduced lunch status, limited English proficiency status, and special education status for 4th, 5th, and 6th grade classrooms in buildings with eMINTS programs. The Utah State Office of Education and participating districts provided data to support the evaluation analysis.

A description of the eMINTS professional development training may be viewed at <http://www.emints.org/programs/comprehensive/index.shtml>.

eMINTS-4-Utah Teacher & Student Profile

The eMINTS-4-Utah program serves 18 Title I schools in five Utah school districts. Among the 18 schools are 12 elementary schools, five middle schools and one high school. A total of 1062 student test scores were considered in the analysis of the eMINTS-4-Utah program performance for the 2004-2005 school year. These students were enrolled in 4th, 5th, or 6th grade classrooms in buildings that had an eMINTS classroom specific to that grade.

Approximately 40 percent of all students considered in the analyses were ethnic minorities and nearly 70 percent of students qualified for free and reduced lunch status, while 33 percent of students in eMINTS classrooms were ethnic minorities and 65 percent were enrolled at some level in the free and reduced lunch program. Approximately 30 percent of all students received limited English proficiency services compared to nearly 23 percent of students within eMINTS classrooms. Overall, 16 percent of students in the analyses were special education students compared to approximately 17 percent in eMINTS classrooms.

Table 1

| Demographic Summary for 4th, 5th and 6th Grade 2005 | | | | | | | | | |
|--|----------|-----------------|-----------------|-----|---------|-----|---------|------------|------------|
| | | N | Percent | N | Percent | N | Percent | N | Percent |
| | Students | Ethnic Minority | Ethnic Minority | FRL | FRL | LEP | LEP | Special Ed | Special Ed |
| eMINTs | 655 | 218 | 33.3% | 426 | 65.0% | 150 | 22.9% | 129 | 19.7% |
| non-eMINTs | 407 | 215 | 52.8% | 297 | 73.0% | 158 | 38.8% | 101 | 24.8% |
| Total | 1062 | 433 | 40.8% | 723 | 68.1% | 308 | 29.0% | 230 | 21.7% |

4th Grade Students by Demographic Characteristics

Approximately 60 percent of 4th grade students included in the analysis were in eMINTS classrooms. In eMINTS classrooms approximately 50 percent of students were ethnic minorities compared to 57 percent in non-eMINTS classrooms. More than 70 percent of students in eMINTS classrooms were in poverty (as determined by free and reduced lunch status) while in non-eMINTS classrooms approximately 76 percent qualified for the free and reduced lunch program. More than 35 percent of 4th grade eMINTS students and 46 percent of non-eMINTS students received limited English proficiency services. Approximately 19 percent of students in both eMINTS and non-eMINTS classrooms were special education students.

Table 2

| Demographic Summary for 4th Grade 2005 | | | | | | | | | |
|---|----------|-----------------|-----------------|-----|---------|-----|---------|------------|------------|
| | | N | Percent | N | Percent | N | Percent | N | Percent |
| | Students | Ethnic Minority | Ethnic Minority | FRL | FRL | LEP | LEP | Special Ed | Special Ed |
| eMINTs | 325 | 160 | 49.2% | 231 | 71.1% | 116 | 35.7% | 61 | 18.8% |
| non-eMINTs | 143 | 81 | 56.6% | 106 | 74.1% | 66 | 46.2% | 27 | 18.9% |
| Total | 468 | 241 | 51.5% | 337 | 72.0% | 182 | 38.9% | 88 | 18.8% |

5th Grade Students by Demographic Characteristics

In total, 250³ 5th grade tests were available for analysis on the language arts and math UPASS CRT tests. Approximately 40 percent of students were enrolled in eMINTS classrooms. Within eMINTS classrooms approximately 25 percent were ethnic minorities and within non-eMINTS classrooms 65 percent were ethnic minorities. Nearly 75 percent of all students qualified for the free and reduced lunch program. Of eMINTS students nearly 68 percent qualified for free and reduced lunch status. Of non-eMINTS students 79 percent qualified for free and reduced lunch status. Slightly greater than 20 percent of eMINTS students received limited English proficiency services, while nearly 49 percent of non-eMINTS students were limited English proficiency status. Approximately 38 percent of all students received special education services, including 35 percent of students in eMINTS classrooms and 40 percent in non-eMINTS classrooms.

Table 3

| Demographic Summary for 5th Grade 2005 | | | | | | | | | |
|---|-----------------|------------------------|------------------------|------------|----------------|------------|----------------|-------------------|-------------------|
| | | N | Percent | N | Percent | N | Percent | N | Percent |
| | Students | Ethnic Minority | Ethnic Minority | FRL | FRL | LEP | LEP | Special Ed | Special Ed |
| eMINTs | 96 | 24 | 25.0% | 65 | 67.7% | 21 | 21.9% | 34 | 35.4% |
| non-eMINTs | 154 | 101 | 65.6% | 122 | 79.2% | 75 | 48.7% | 62 | 40.3% |
| Total | 250 | 125 | 50.0% | 187 | 74.8% | 96 | 38.4% | 96 | 38.4% |

6th Grade Students by Demographic Characteristics

In total, 344 6th grade tests were available for analysis. Approximately 68 percent of these students were in eMINTS classrooms. Within eMINTS classrooms, approximately 14 percent were ethnic minorities, approximately 55 percent qualified for free and reduced lunch, about six percent of students had limited English proficiency, and nearly 15 percent of students in eMINTS classrooms were special education students. Within non-eMINTS classrooms, approximately 30 percent of students were ethnic minorities, 63 percent qualified for the free and reduced lunch program, 16 percent were of limited English proficiency, and eleven percent of students received special education services.

Table 4

| Demographic Summary for 6th Grade 2005 | | | | | | | | | |
|---|-----------------|------------------------|------------------------|------------|----------------|------------|----------------|-------------------|-------------------|
| | | N | Percent | N | Percent | N | Percent | N | Percent |
| | Students | Ethnic Minority | Ethnic Minority | FRL | FRL | LEP | LEP | Special Ed | Special Ed |
| eMINTs | 234 | 34 | 14.5% | 130 | 55.6% | 13 | 5.6% | 34 | 14.5% |
| non-eMINTs | 110 | 33 | 30.0% | 69 | 62.7% | 17 | 15.5% | 12 | 10.9% |
| Total | 344 | 67 | 19.5% | 199 | 57.8% | 30 | 8.7% | 46 | 13.4% |

³ Due to the organization of the science curriculum in one of the eMINTS school districts, 219 5th grade sciences tests were analyzed.

Methodology of Proficiency Level Analyses

For this analysis, individual students' UPASS scale scores were available, along with their proficiency status aggregated to proficient or not proficient and educationally-relevant demographic characteristics: (race group, free & reduced lunch eligibility, limited English proficiency, and special education status).

The primary focus of this report is to examine student proficiency across demographic groups using Chi-square and cross-tabulations. The use of z-tests of proportions, an analogous test, is also discussed. Additionally, General Linear Models procedures (Two-way ANOVA) were performed, where methodologically appropriate, to examine simultaneous interactions between eMINTs participation, demographic characteristics and achievement as measured by UPASS scale scores.

Treatment of the Variables

For cross-tabulation-related analyses, Race Group, Free and Reduced Lunch (FR/L) status, and Limited English Proficiency (LEP) status were recoded from multiple dimensions to make dichotomous comparisons possible:

- Race = Caucasian, Ethnic Minority
- FRL = Free & Reduced Lunch participant, Not Free & Reduced Lunch
- LEP = Limited English Proficiency services recipient, Not LEP recipient
- Spec. Ed. = Special Education services recipient, Not Spec. Ed. Recipient

A Chi-square analysis was used to test the statistical significance of the relationship between dichotomous pairs.

Cross-Tabular and Chi-Square Analyses

Chi-square was chosen for analysis in lieu of the less conservative z-test of proportions because the more conservative test leads to greater certainty about relationships between variables when significant relationships are found.

Pearson's Chi-square is a statistical measure that tests whether the cell sizes in a cross-tabulation table differ from what is expected. If statistically significant at $p=0.05$, the criterion used in these Chi-square analyses, a relationship is indicated between the two variables being compared that can be interpreted as not due to chance or error at a 95 percent level of confidence.

Chi-square tests using the proficiency level by eMINTs status variables were performed separately for each level (e.g., Caucasian & Ethnic Minority) of demographic groups (e.g., race group) by grade as well as across grades (4th through 6th). The following tables and charts show the results of these analyses.

Findings of Proficiency Level Analysis

For any given type of data, several, or even hundreds of analytical techniques may be methodologically appropriate; but, the analyses for this report were chosen because they effectively address the policy issues involved: specifically, does enrollment in eMINTS classrooms narrow the achievement gap between Title I and non-Title I students?

In summary, when considered in aggregate, a greater percentage of 4th, 5th, and 6th grade students enrolled in eMINTS classrooms scored at proficient levels on the UPASS CRT Language Arts, Mathematics, and Science tests than did students in the non-eMINTS comparison classrooms.

When considered by grade⁴, a statistically significant greater number of eMINTS students scored at proficient levels on the UPASS tests:

- 6th grade Language Arts
- 4th grade Math
- 6th grade Math
- 4th grade Science
- 6th grade Science

When disaggregated by social and demographic factors, a significantly higher percent of eMINTS students scored proficiently than did non-eMINTS students with respect to:

- Ethnic Minority students in Math
- Ethnic Minority students in Science
- FRL students in Math
- Non-FRL students in Language Arts
- Non-FRL students in Science
- Limited English Proficiency students in Math
- Non-Limited English Proficiency students in Math
- Non-special education students in Language Arts
- Non-special education students in Math
- Non-special education students in Science

⁴ The N of 5th grade students available for analysis was relatively small, decreasing the likelihood of finding statistically significant differences.

Language Arts Results

In aggregate, a statistically significant difference exists between the percent of eMINTS and non-eMINTS students scoring at proficient levels. In each grade, a greater percent of eMINTS students are proficient in Language Arts as defined by their performance on the UPASS test. Additionally, a statistically significant relationship between eMINTS participation and language arts proficiency was found for 6th grade students independent of demographic characteristics.

Table 5

UPASS 2005 Language Arts percent proficient by grade and eMINTS participation

| UPASS Lang. Arts, eMINTS * Proficiency Level Cross tabulation, by eMINTS Status | | | | | | | |
|---|--------------|------------|----------|-----------------------|------------------------------|-----------------|----------------|
| Group | | Chi-Square | | | Percent Proficient, by Group | | |
| | Group | Chi-Square | df (N) | Asymp. Sig. (2-sided) | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | All Groups | 3.351 | 1 (468) | 0.067 | (71) 49.65% | (191) 58.77% | (262) 56.00% |
| 5th Grade | All Groups | 3.772 | 1 (250) | 0.052 | (72) 46.75% | (57) 59.38% | (129) 51.60% |
| 6th Grade | All Groups * | 4.118 | 1 (344) | 0.042 | (68) 61.82% | (170) 72.65% | (238) 69.20% |
| All Grades | All Groups * | 14.904 | 1 (1062) | 0.000 | (211) 51.80% | (418) 63.80% | (629) 59.20% |

* eMINTS by proficient Chi-square significant, $p < 0.05$

Figure 1

UPASS 2005 Language Arts percent proficient by eMINTS participation

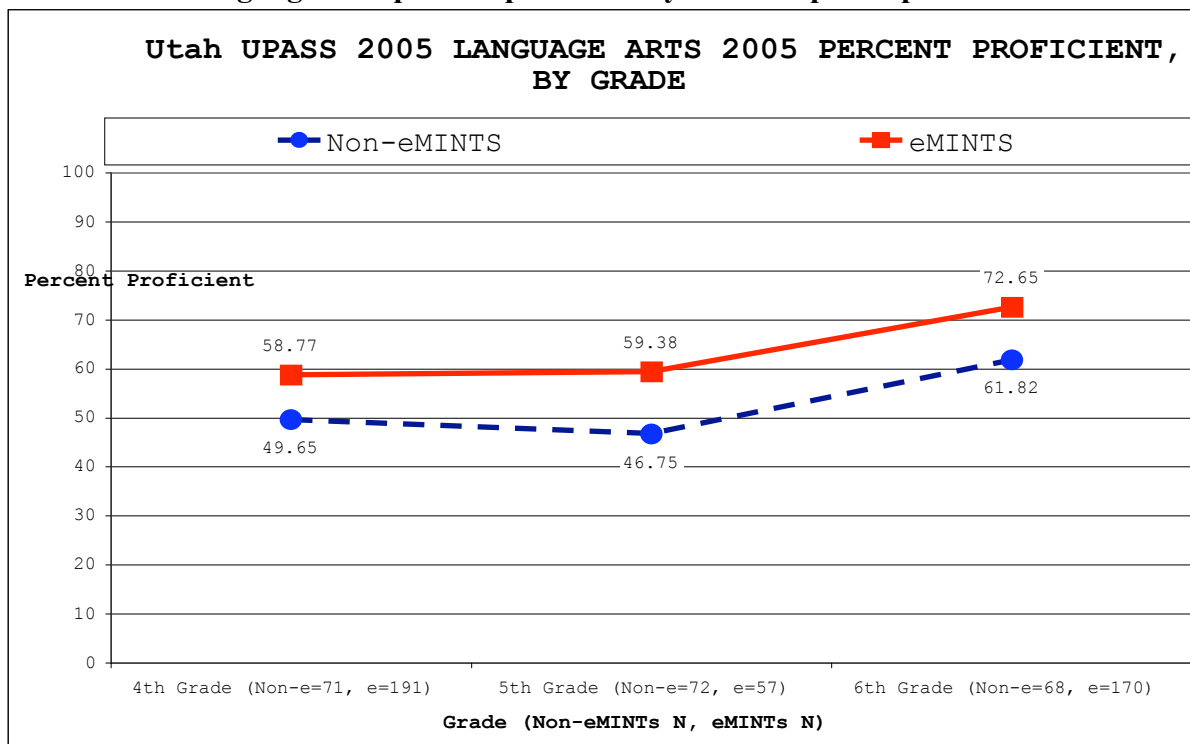


Table 6 UPASS 2005 Language Arts percent proficient by grade, eMINTs participation and Race Group

| UPASS Lang. Arts, eMINTS * Proficiency Level Crosstabulation, by Race Group and Grade | | | | | | | |
|---|-----------------|------------|---------|-------|------------------------------|-----------------|-----------------|
| Group | | Chi-Square | | | Percent Proficient, by Group | | |
| Grade | Race Group | Chi Square | df (N) | Sig. | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | Caucasian | 2.606 | 1 (227) | 0.106 | (37) 59.70% | (117) 70.90% | (154) 67.80% |
| | Ethnic Minority | 0.397 | 1 (241) | 0.528 | (34) 42.00% | (74) 46.30% | (108) 44.80% |
| 5th Grade | Caucasian | 1.013 | 1 (125) | 0.314 | (37) 69.80% | (44) 61.10% | (81) 64.80% |
| | Ethnic Minority | 3.122 | 1 (125) | 0.077 | (35) 34.70% | (13) 54.20% | (48) 38.40% |
| 6th Grade | Caucasian | 0.633 | 1 (277) | 0.426 | (57) 74.00% | (157) 78.50% | (214) 77.30% |
| | Ethnic Minority | 0.175 | 1 (67) | 0.676 | (11) 33.30% | (13) 38.20% | (24) 35.80% |
| All Grades | Caucasian | 1.346 | 1 (629) | 0.246 | (131) 68.23% | (318) 72.77% | (449) 71.38% |
| | Ethnic Minority | 3.344 | 1 (433) | 0.067 | (80) 37.21% | (100) 45.87% | (180) 41.57% |

* eMINTs by proficient Chi-square significant, $p < 0.05$

No statistically significant relationship between eMINTS participation and Language Arts proficiency for any grade by Race Group.

Figure 2
UPASS 2005 4th Grade Language Arts percent proficient by eMINTs participation
and Race Group

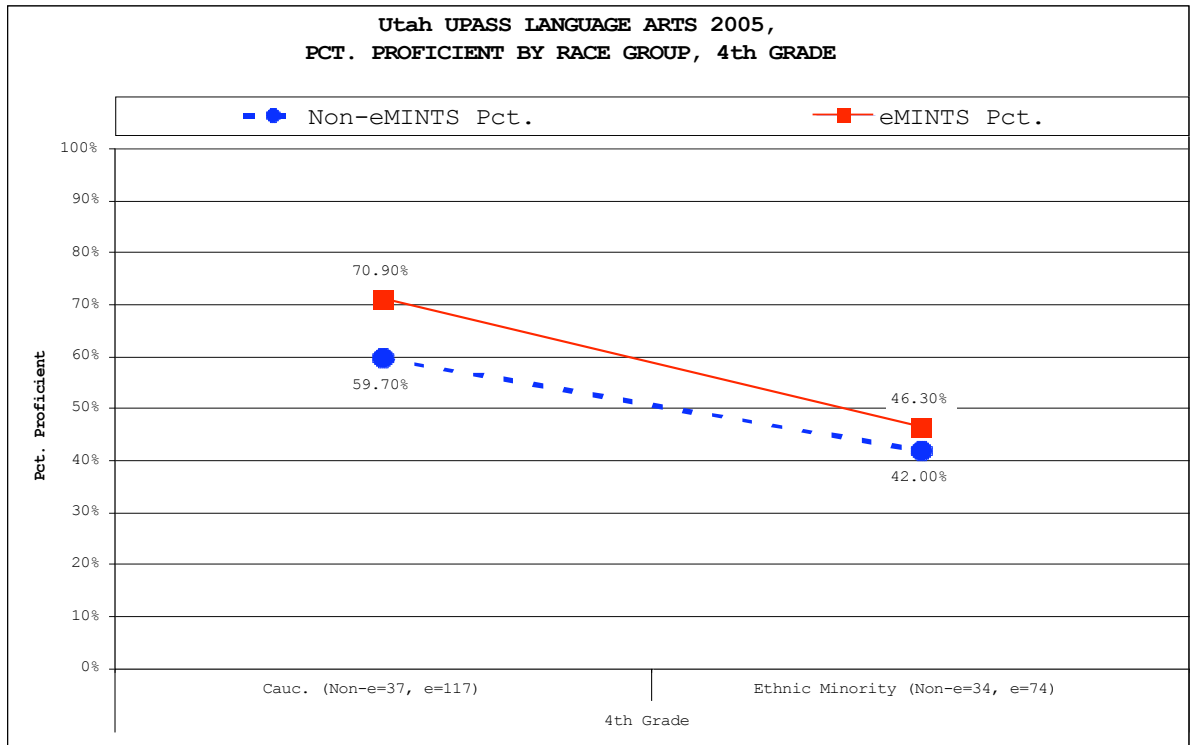


Figure 3 **UPASS 2005 5th Grade Language Arts percent proficient by eMINTs**
participation and Race Group

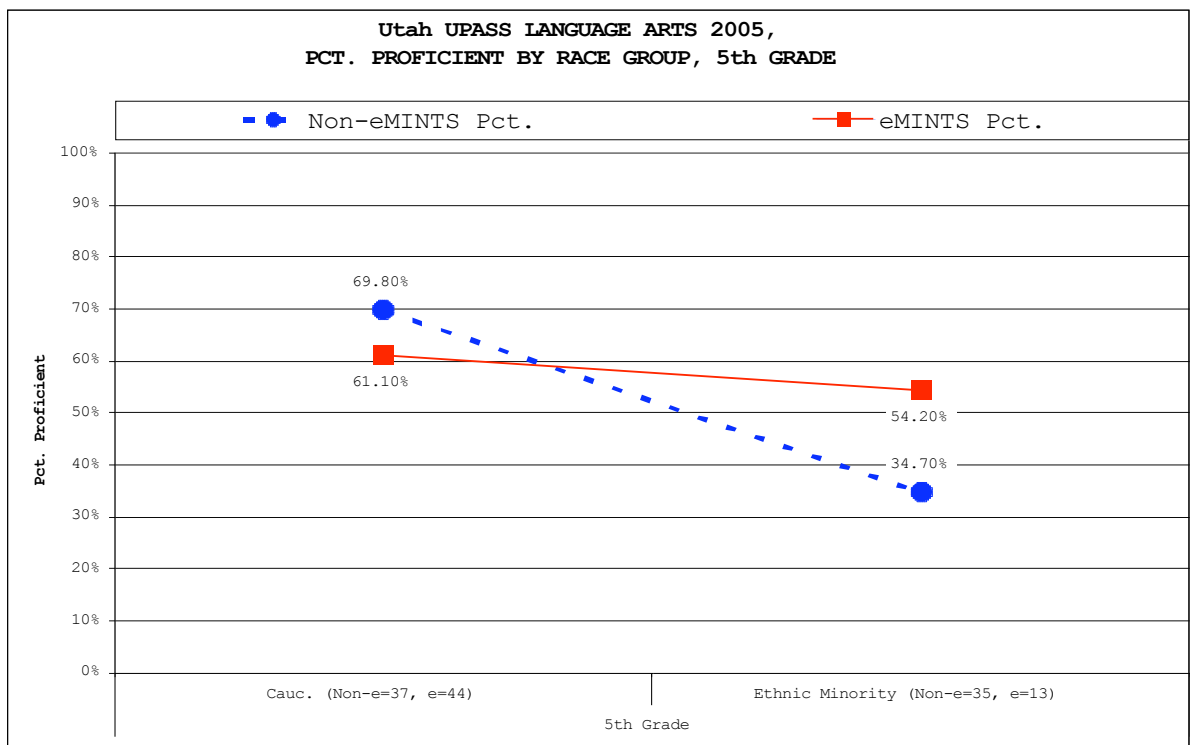


Figure 4
UPASS 2005 6th Grade Language Arts percent proficient by eMINTs participation and Race Group

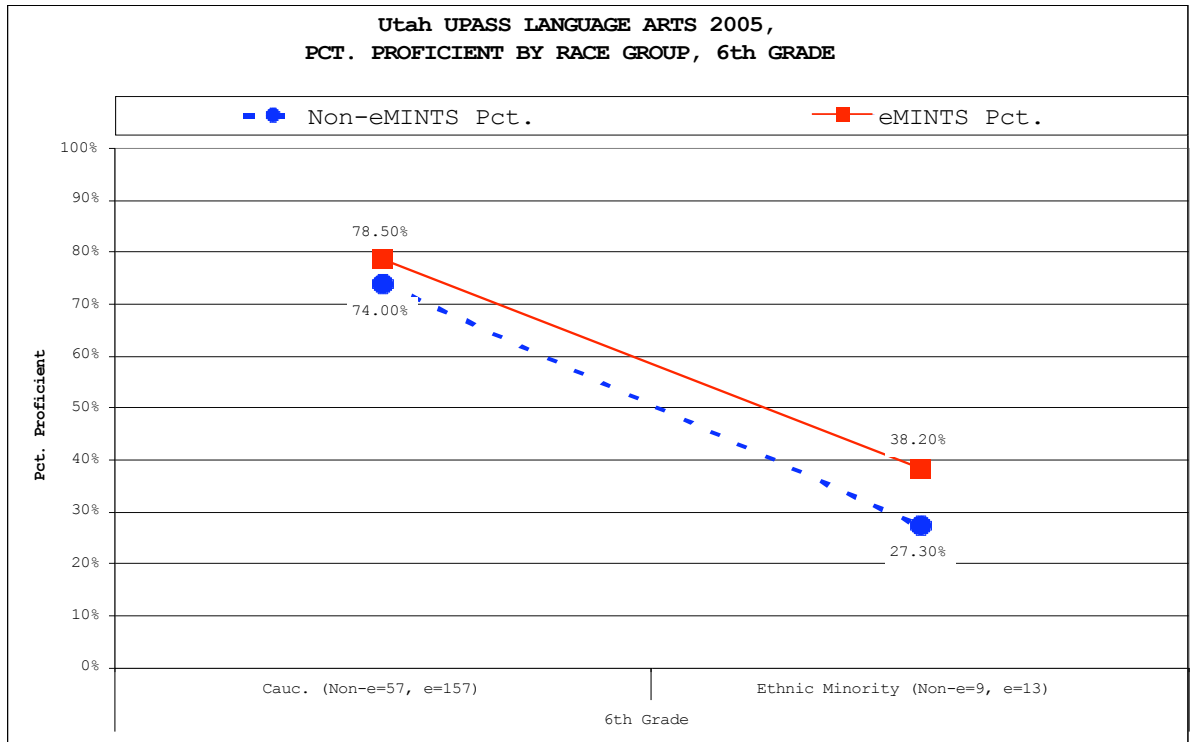


Figure 5
UPASS 2005 4th through 6th Grade Language Arts percent proficient by eMINTs participation and Race Group

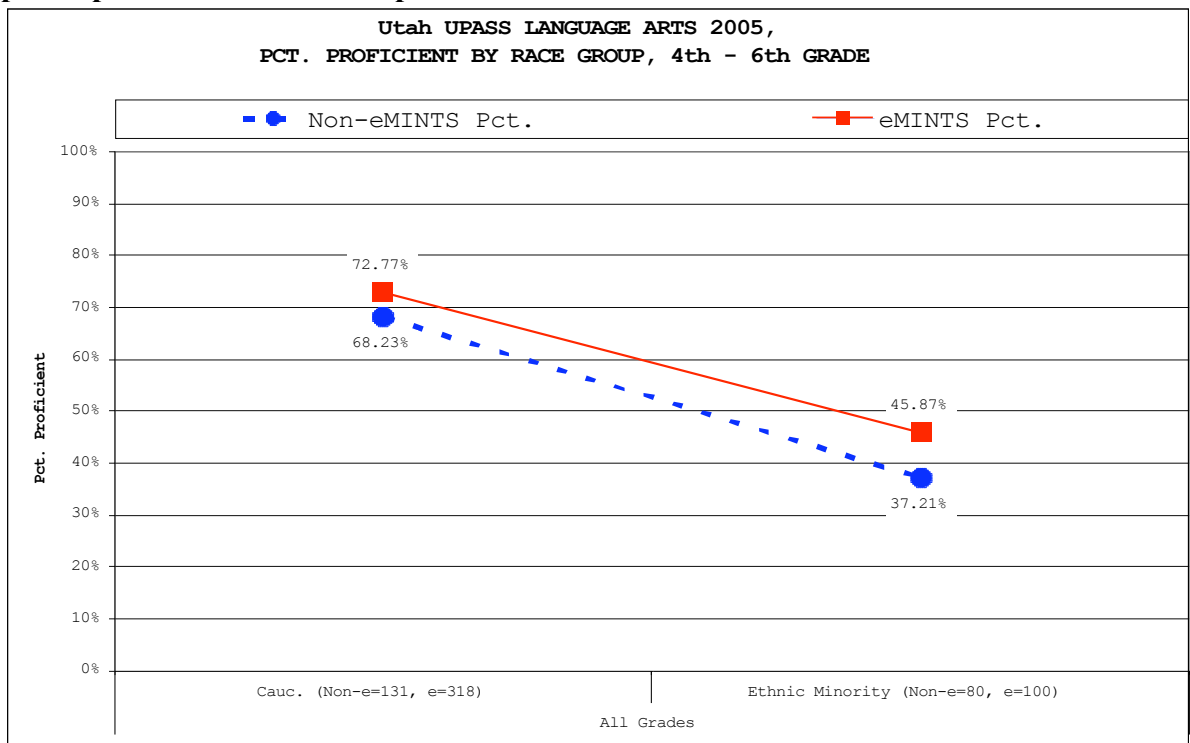


Table 7**UPASS 2005 Language Arts percent proficient by grade, eMINTs participation and F/RL Status**

| UPASS Lang. Arts, eMINTS * Proficiency Level Crosstabulation, by F/R Lunch Status and Grade | | | | | | | |
|---|-----------|------------|---------|-------|------------------------------|-----------------|-----------------|
| Group | | Chi-Square | | | Percent Proficient, by Group | | |
| Grade | F/R Lunch | Chi Square | df (N) | Sig. | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | No * | 8.822 | 1 (131) | 0.003 | (20) 54.10% | (75) 79.80% | (95) 72.50% |
| | Yes | 0.129 | 1 (337) | 0.720 | (51) 48.10% | (116) 50.20% | (167) 49.60% |
| 5th Grade | No | 0.069 | 1 (62) | 0.793 | (19) 61.30% | (20) 64.50% | (39) 62.90% |
| | Yes | 3.087 | 1 (187) | 0.079 | (53) 43.40% | (37) 56.90% | (90) 48.10% |
| 6th Grade | No | 2.542 | 1 (145) | 0.111 | (30) 73.20% | (88) 84.60% | (118) 81.40% |
| | Yes | 1.206 | 1 (199) | 0.272 | (38) 55.10% | (82) 63.10% | (120) 60.30% |
| All Grades | No * | 10.740 | 1 (338) | 0.001 | (69) 63.30% | (183) 79.91% | (252) 74.56% |
| | Yes | 3.791 | 1 (723) | 0.052 | (142) 47.81% | (235) 55.16% | (377) 52.14% |

* eMINTs by proficient Chi-square significant, $p < 0.05$

A statistically significant relationship between eMINTS participation and language arts proficiency was found for non-F/R Lunch 4th graders and for non-F/R Lunch students independent of grade.

Figure 6
UPASS 2005 4th Grade Language Arts percent proficient by eMINTs participation
and F/R Lunch Status

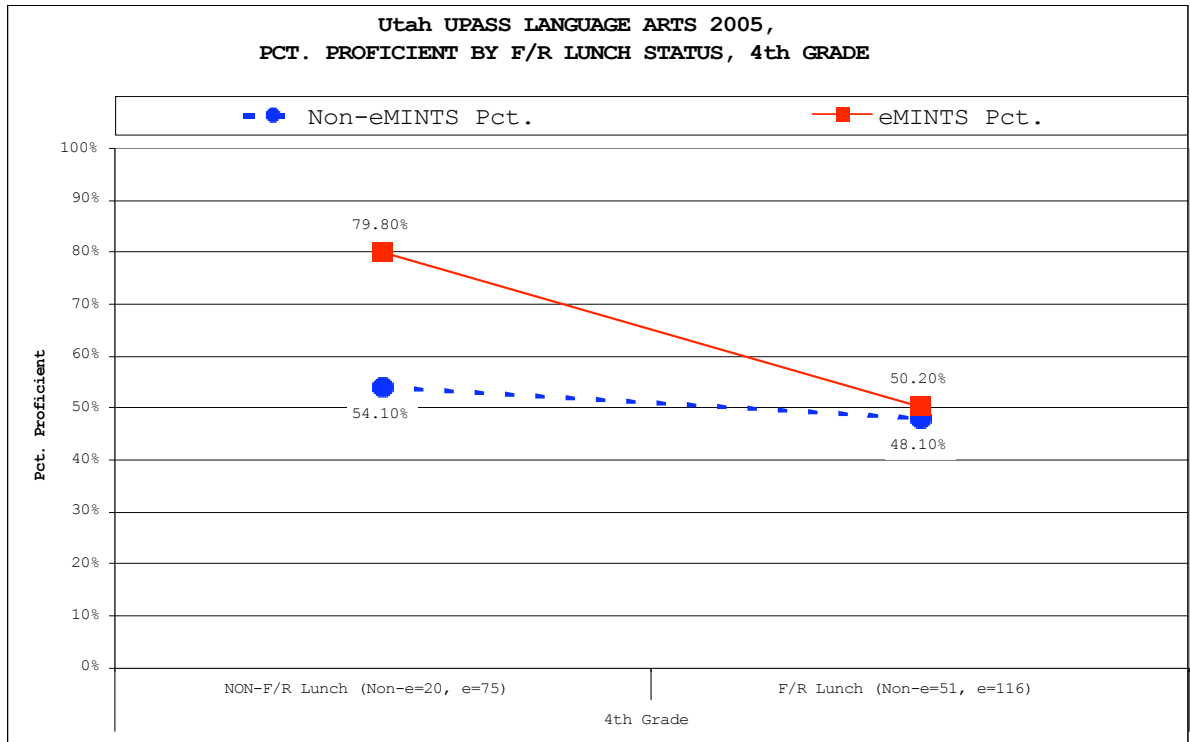


Figure 7
UPASS 2005 5th Grade Language Arts percent proficient by eMINTs participation
and F/R Lunch Status

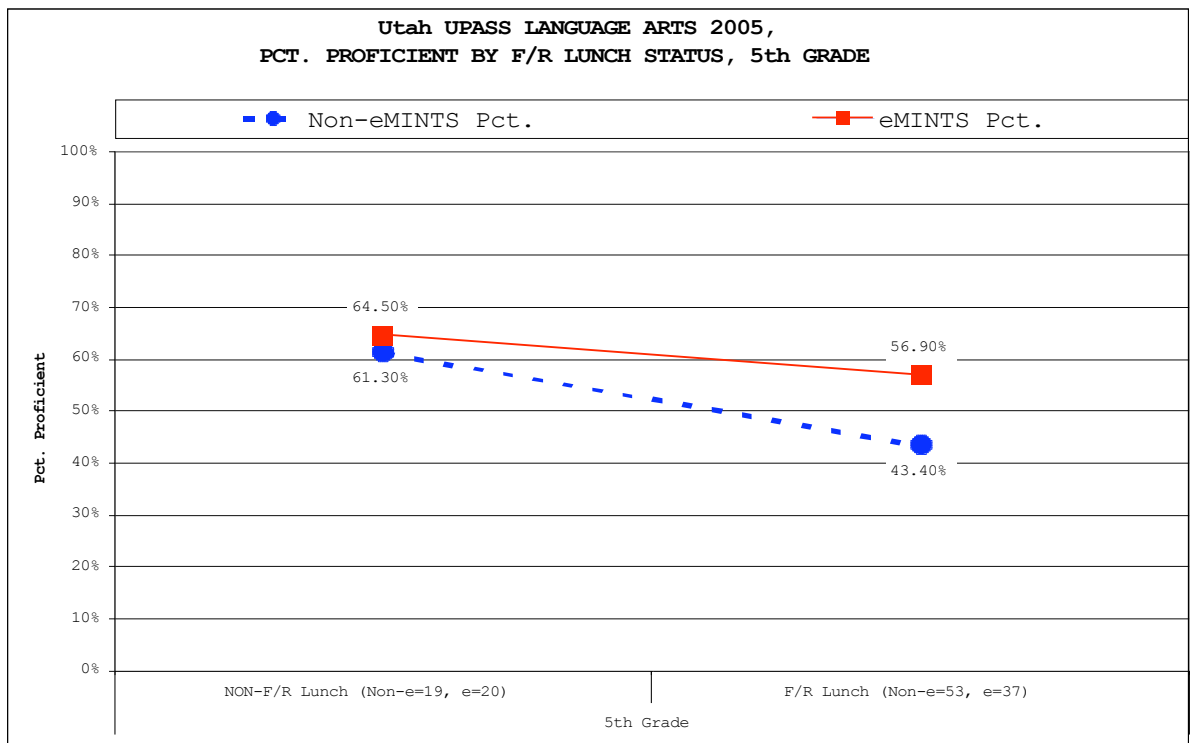


Figure 8
UPASS 2005 6th Grade Language Arts percent proficient by eMINTs participation and F/R Lunch Status

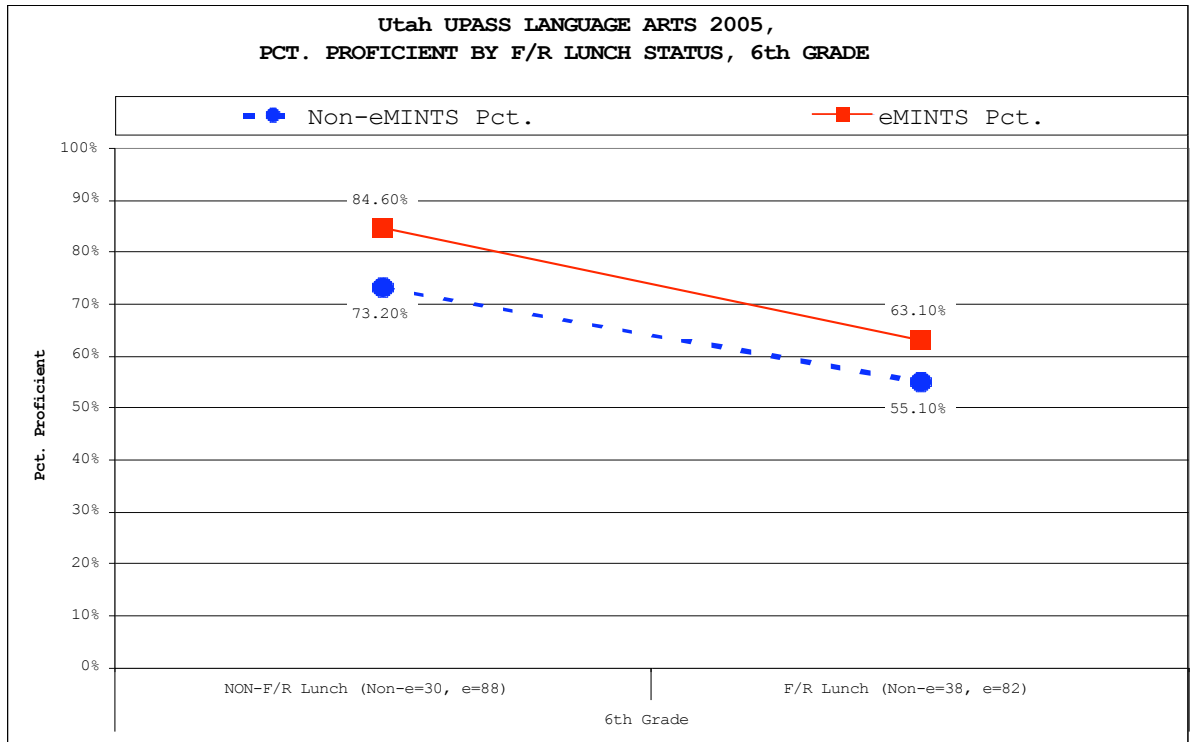


Figure 9
UPASS 2005 4th through 6th Grade Language Arts percent proficient by eMINTs participation and F/R Lunch Status

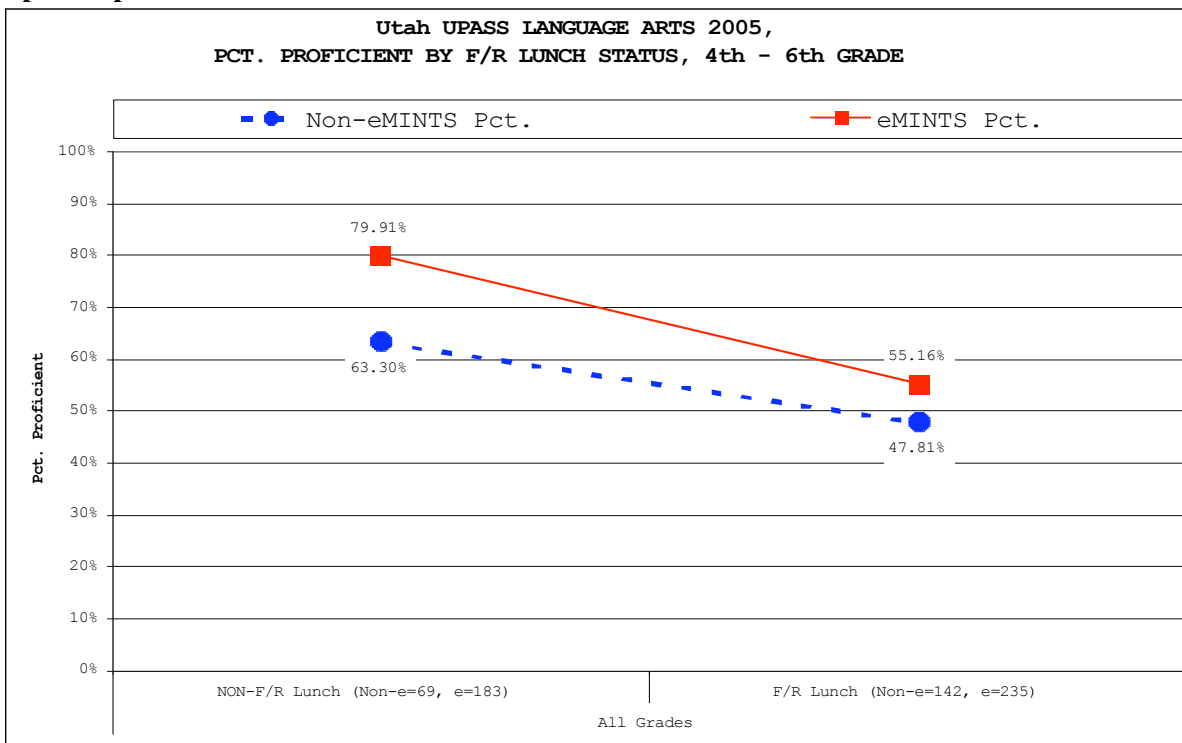


Table 8**UPASS 2005 Language Arts percent proficient by grade, eMINTs participation and LEP Status**

| UPASS Lang. Arts, eMINTS * Proficiency Level Crosstabulation, by LEP Status and Grade | | | | | | | |
|---|------------|------------|---------|-------|------------------------------|-----------------|-----------------|
| Group | | Chi-Square | | | Percent Proficient, by Group | | |
| Grade | LEP Status | Chi Square | df (N) | Sig. | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | No | 2.376 | 1 (286) | 0.123 | (44) 57.10% | (140) 67.00% | (184) 64.30% |
| | Yes | 0.160 | 1 (182) | 0.689 | (27) 40.90% | (51) 44.00% | (78) 42.90% |
| 5th Grade | No | 0.163 | 1 (154) | 0.687 | (47) 59.50% | (47) 62.70% | (94) 61.00% |
| | Yes | 1.445 | 1 (96) | 0.229 | (25) 33.30% | (10) 47.60% | (35) 36.50% |
| 6th Grade | No | 0.797 | 1 (314) | 0.372 | (64) 68.80% | (163) 73.80% | (227) 72.30% |
| | Yes | 2.916 | 1 (30) | 0.088 | (4) 23.50% | (7) 53.80% | (11) 36.70% |
| All Grades | No | 3.756 | 1 (754) | 0.053 | (155) 62.25% | (350) 69.31% | (505) 66.98% |
| | Yes | 3.130 | 1 (308) | 0.077 | (56) 35.44% | (68) 45.33% | (124) 40.26% |

* eMINTs by proficient Chi-square significant, $p < 0.05$

No statistically significant relationship between eMINTS participation and language arts proficiency for any grade or LEP group.

Figure 10
UPASS 2005 4th Grade Language Arts percent proficient by eMINTs participation
and LEP Status

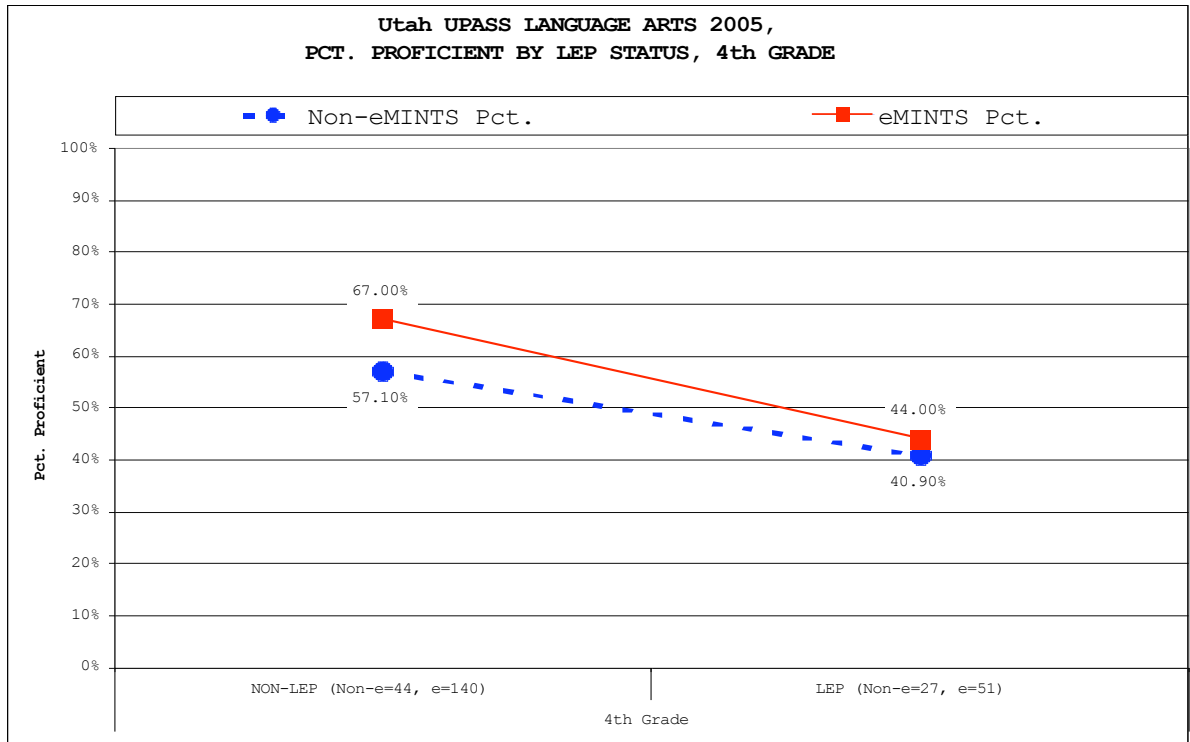


Figure 11
UPASS 2005 5th Grade Language Arts percent proficient by eMINTs participation
and LEP Status

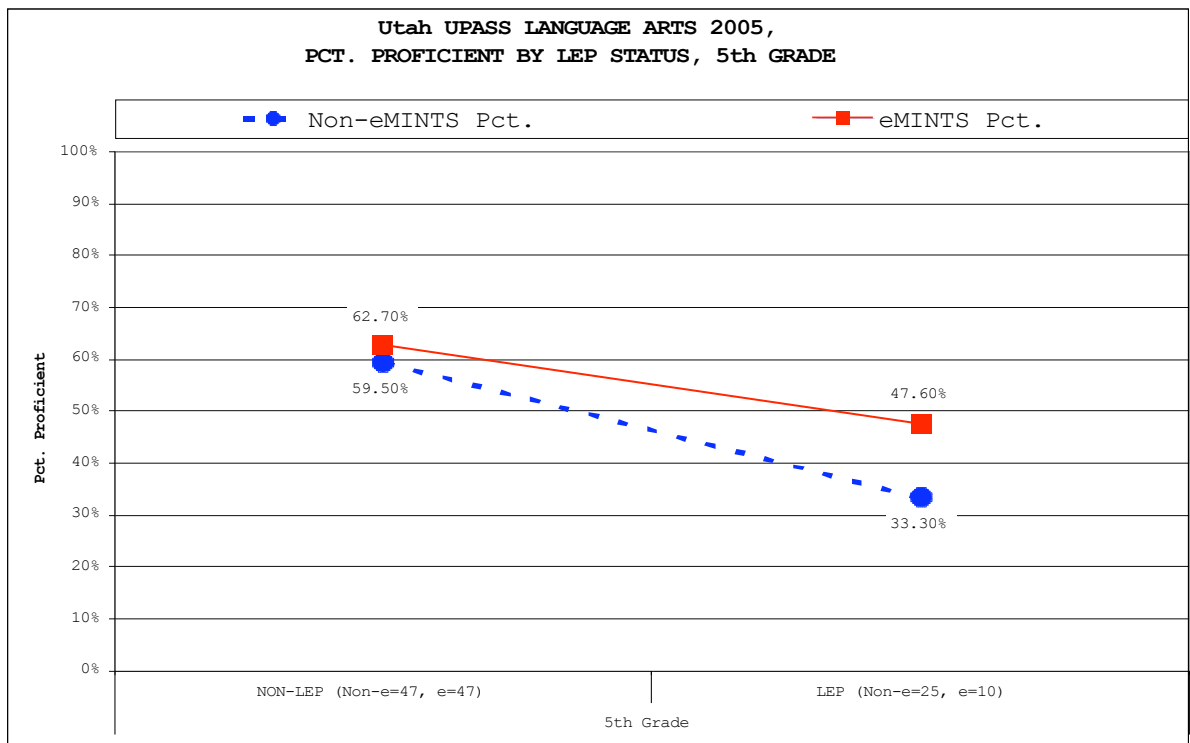


Figure 12
UPASS 2005 6th Grade Language Arts percent proficient by eMINTs participation and LEP Status

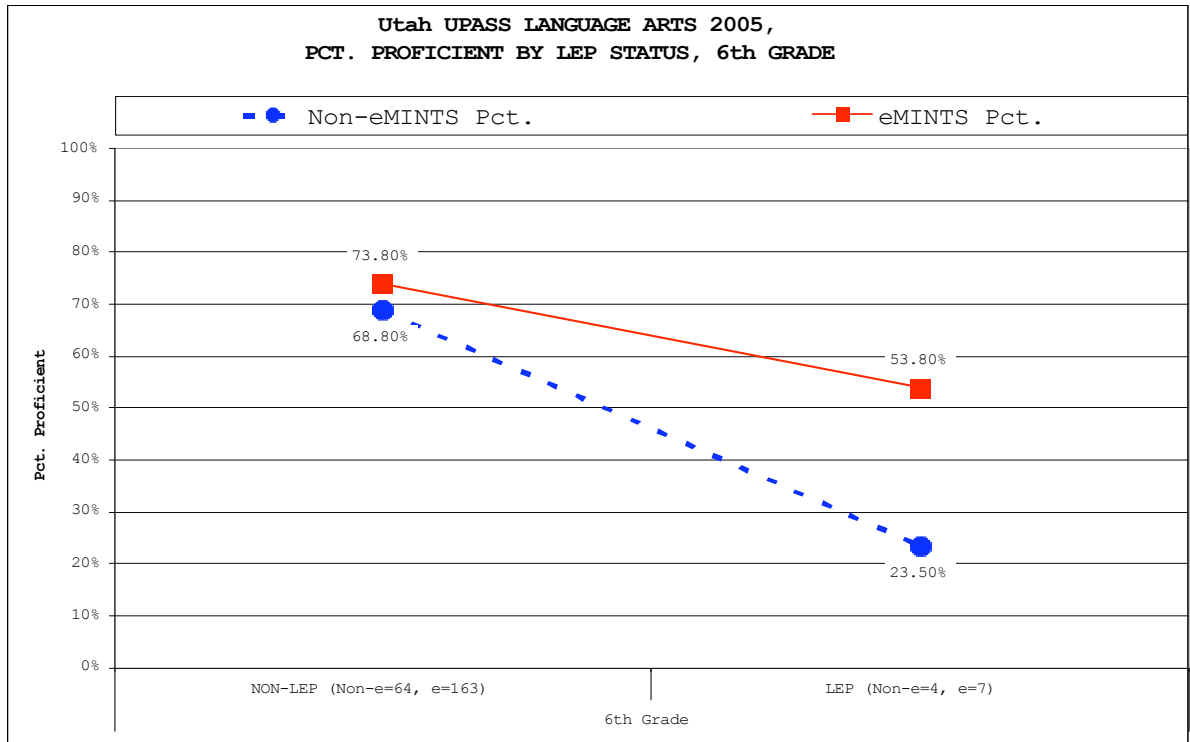


Figure 13
UPASS 2005 4th through 6th Grade Language Arts percent proficient by eMINTs participation and LEP Status

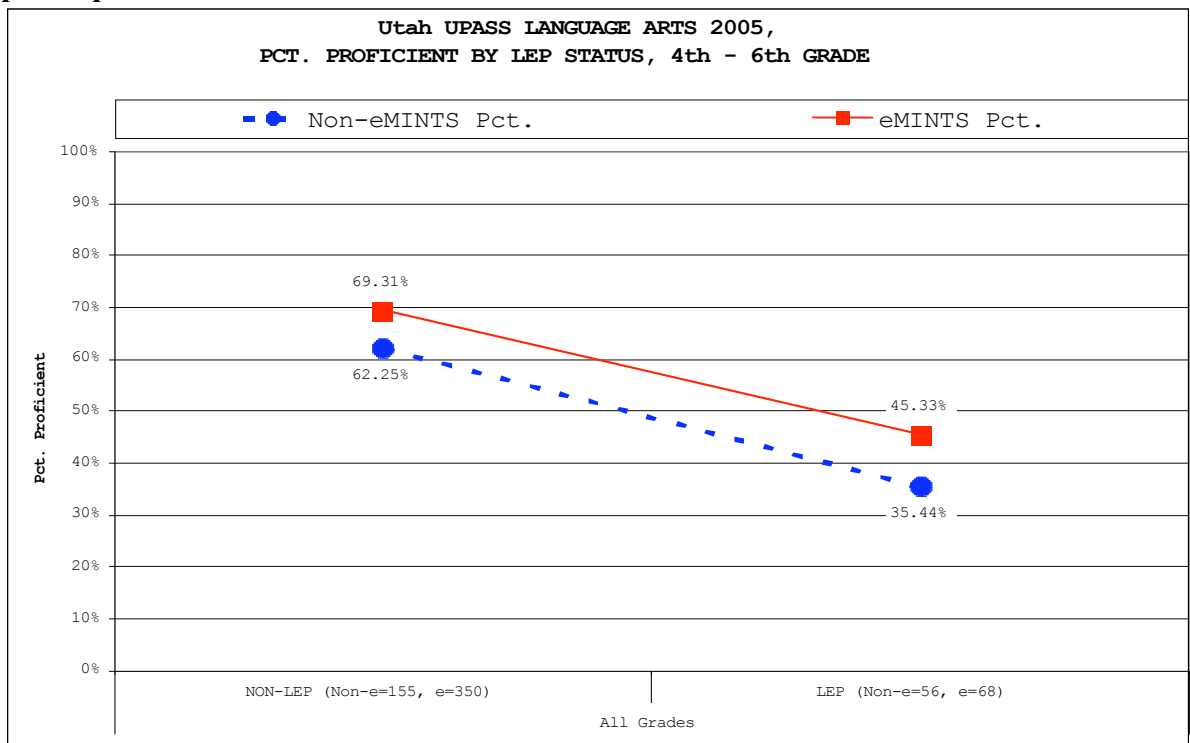


Table 9**UPASS 2005 Language Arts percent proficient by grade, eMINTS participation and Special Education Status**

| UPASS Lang. Arts, eMINTS * Proficiency Level Crosstabulation, by Spec. Ed. Status and Grade | | | | | | | |
|---|------------------|------------|---------|-------|------------------------------|-----------------|-----------------|
| Group | | Chi-Square | | | Percent Proficient, by Group | | |
| Grade | Spec. Ed. Status | Chi Square | df (N) | Sig. | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | No | 3.367 | 1 (380) | 0.067 | (65) 56.00% | (174) 65.90% | (239) 62.90% |
| | Yes | 0.309 | 1 (88) | 0.578 | (6) 22.20% | (17) 27.90% | (23) 26.10% |
| 5th Grade | No | 3.336 | 1 (212) | 0.068 | (69) 52.70% | (53) 65.40% | (122) 57.50% |
| | Yes | 1.121 | 1 (38) | 0.290 | (3) 13.00% | (4) 26.70% | (7) 18.40% |
| 6th Grade | No * | 5.387 | 1 (298) | 0.020 | (67) 68.40% | (161) 80.50% | (228) 76.50% |
| | Yes | 1.715 | 1 (46) | 0.190 | (1) 8.30% | (9) 26.50% | (10) 21.70% |
| All Grades | No * | 15.785 | 1 (890) | 0.000 | (201) 58.26% | (388) 71.19% | (589) 66.18% |
| | Yes | 2.759 | 1 (172) | 0.097 | (10) 16.13% | (30) 27.27% | (40) 23.26% |

* eMINTS by proficient Chi-square significant, $p < 0.05$

A statistically significant relationship between eMINTS participation and language arts proficiency was found for non-Special Ed. 6th graders and for non-Special Ed. students independent of grade.

Figure 14
UPASS 2005 4th Grade Language Arts percent proficient by eMINTs participation
and Special Education Status

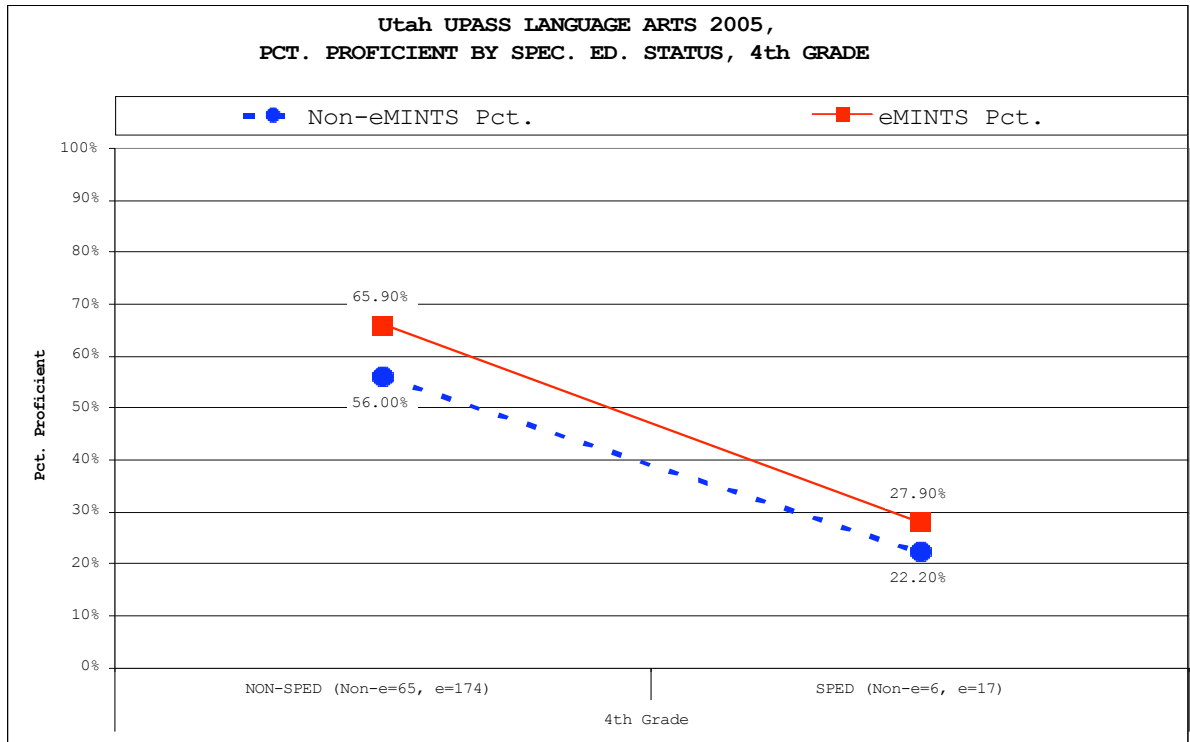


Figure 15
UPASS 2005 5th Grade Language Arts percent proficient by eMINTs participation

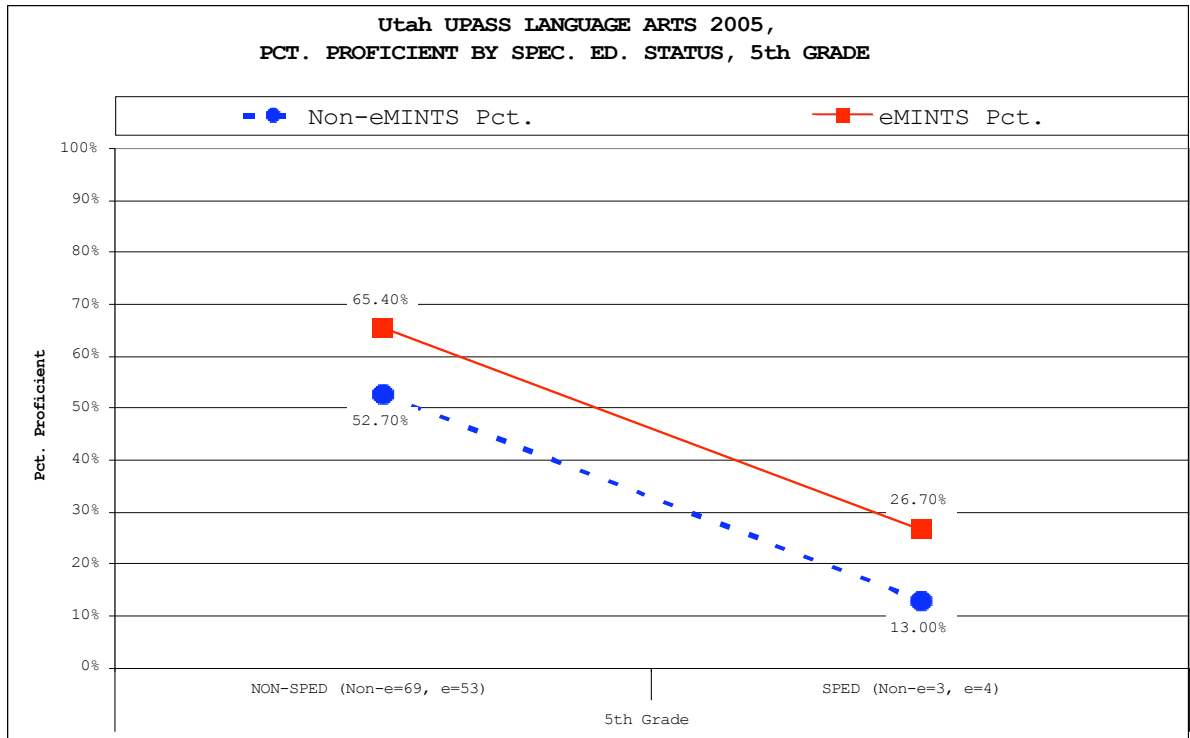


Figure 16
UPASS 2005 6th Grade Language Arts percent proficient by eMINTs participation
and Special Education Status

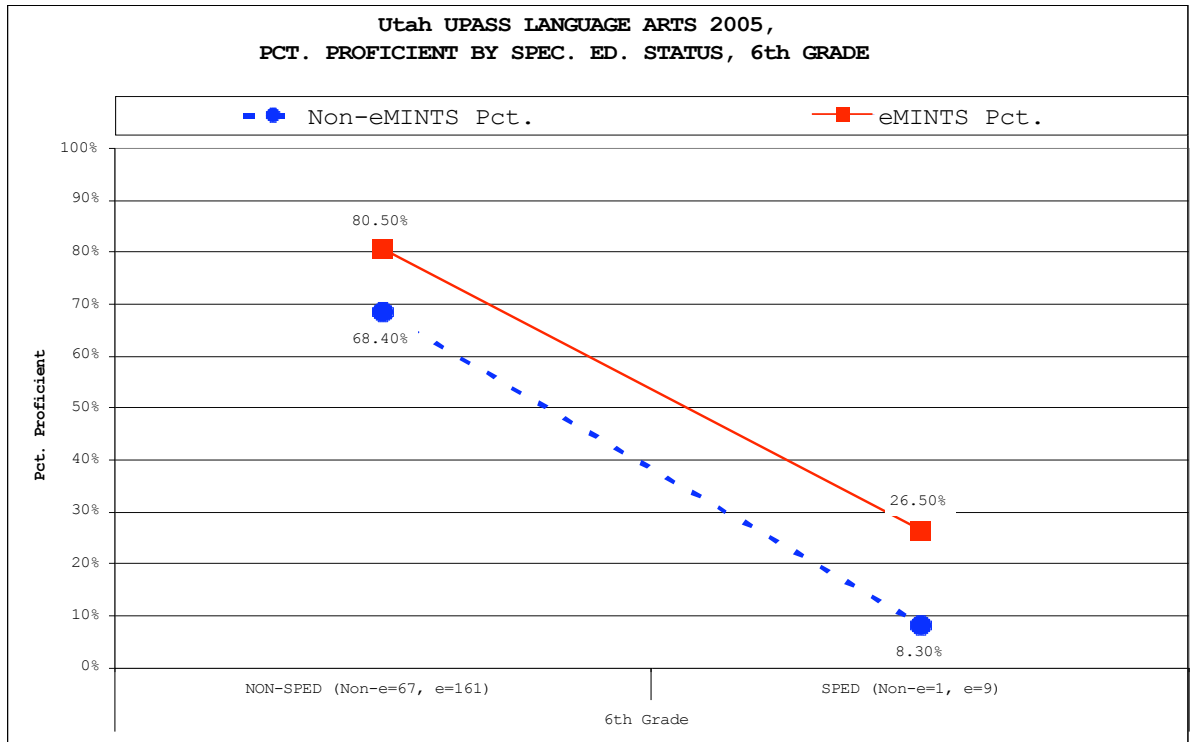
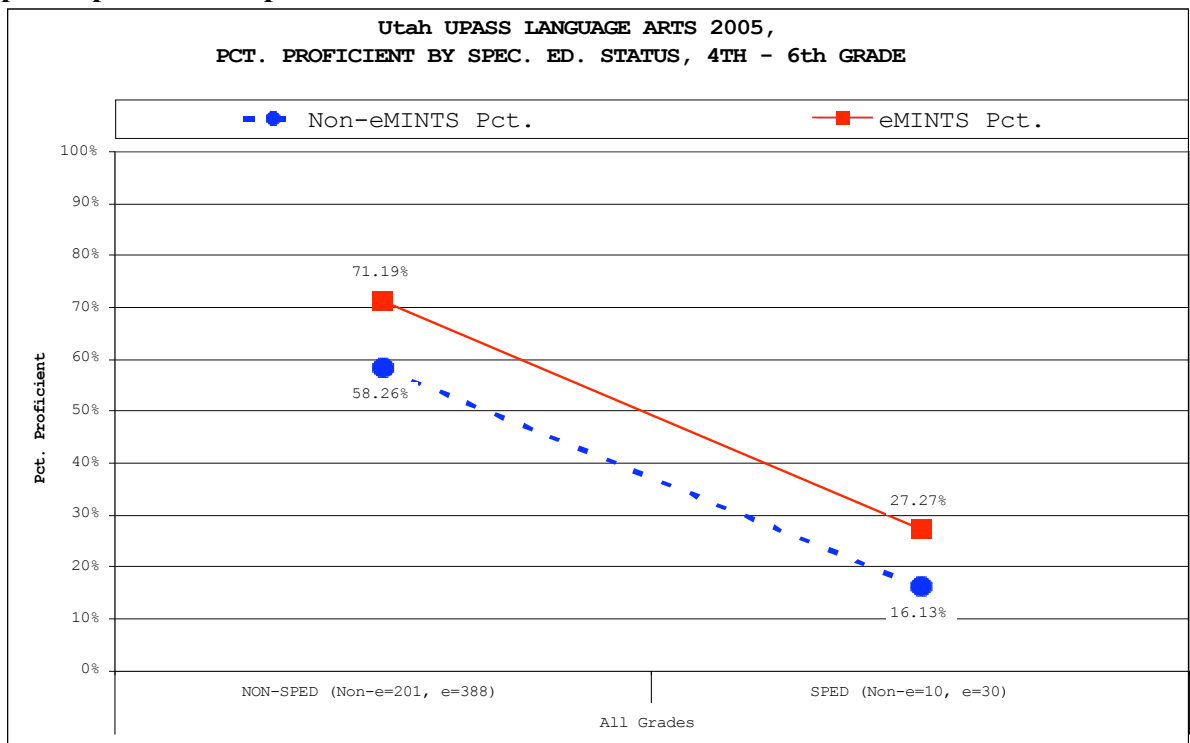


Figure 17
UPASS 2005 4th through 6th Grade Language Arts percent proficient by eMINTs
participation and Special Education Status



Mathematics Results

A statistically significant relationship between eMINTS participation and mathematics proficiency was found for both 4th and 6th grade students, independent of demographics characteristics and for all students independent of grade and demographic group.

Table 10

UPASS 2005 Mathematics percent proficient by grade and eMINTS

| UPASS Mathematics, eMINTS * Proficiency Level Crosstabulation, by eMINTS Status | | | | | | | |
|---|--------------|------------|----------|-----------------------|------------------------------|-----------------|----------------|
| Group | | Chi-Square | | | Percent Proficient, by Group | | |
| | Group | Chi-Square | df (N) | Asymp. Sig. (2-sided) | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | All Groups * | 7.703 | 1 (466) | 0.006 | (61) 43.26% | (186) 57.23% | (247) 53.00% |
| 5th Grade | All Groups | 0.582 | 1 (250) | 0.445 | (79) 51.30% | (54) 56.25% | (133) 53.20% |
| 6th Grade | All Groups * | 6.642 | 1 (345) | 0.010 | (58) 52.25% | (156) 66.67% | (214) 62.00% |
| All Grades | All Groups * | 13.899 | 1 (1061) | 0.000 | (198) 48.80% | (396) 60.50% | (594) 56.00% |

* eMINTs by proficient Chi-square significant, $p < 0.05$

Figure 18

UPASS 2005 4th through 6th Grade Mathematics percent proficient by eMINTS participation

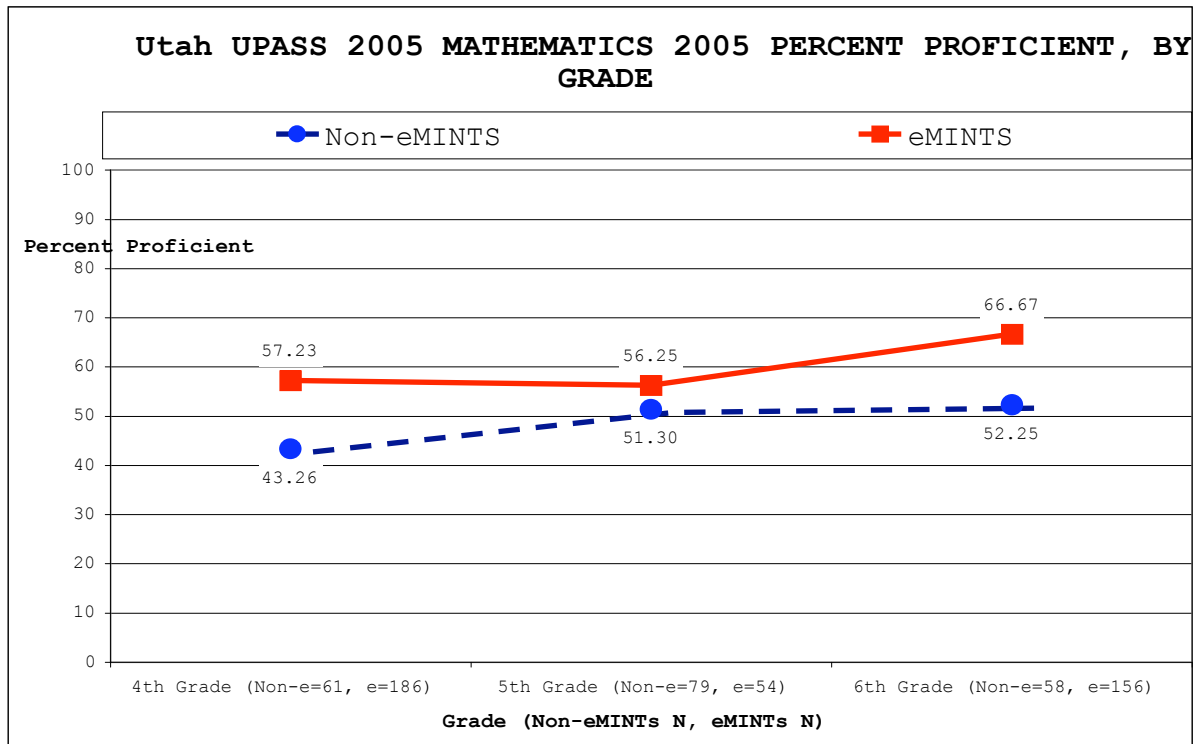


Table 11**UPASS 2005 Mathematics percent proficient by grade, eMINTs participation and Race Group**

| UPASS Mathematics, eMINTS * Proficiency Level Crosstabulation, by Race Group and Grade | | | | | | | |
|--|-------------------|------------|---------|-------|------------------------------|-----------------|-----------------|
| Group | | Chi-Square | | | Percent Proficient, by Group | | |
| Grade | Race Group | Chi Square | df (N) | Sig. | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | Caucasian | 1.469 | 1 (227) | 0.225 | (34) 54.80% | (105) 63.60% | (139) 61.20% |
| | Ethnic Minority * | 5.776 | 1 (239) | 0.016 | (27) 34.20% | (81) 50.60% | (108) 45.20% |
| 5th Grade | Caucasian | 0.934 | 1 (125) | 0.334 | (34) 64.20% | (40) 55.60% | (74) 59.20% |
| | Ethnic Minority | 1.477 | 1 (125) | 0.224 | (45) 44.60% | (14) 58.30% | (59) 47.20% |
| 6th Grade | Caucasian | 1.979 | 1 (278) | 0.160 | (49) 62.80% | (143) 71.50% | (192) 69.10% |
| | Ethnic Minority | 0.913 | 1 (67) | 0.339 | (9) 27.30% | (13) 38.20% | (22) 32.80% |
| All Grades | Caucasian | 1.627 | 1 (630) | 0.202 | (117) 60.62% | (288) 65.90% | (405) 64.29% |
| | Ethnic Minority * | 5.800 | 1 (431) | 0.016 | (81) 38.03% | (108) 49.54% | (189) 43.85% |

* eMINTs by proficient Chi-square significant, $p < 0.05$

A statistically significant relationship between eMINTS participation and mathematics proficiency was found for 4th grade Ethnic Minority students and all Ethnic Minority students independent of grade.

Figure 19
UPASS 2005 4th Grade Mathematics percent proficient by eMINTs participation
and Race Group

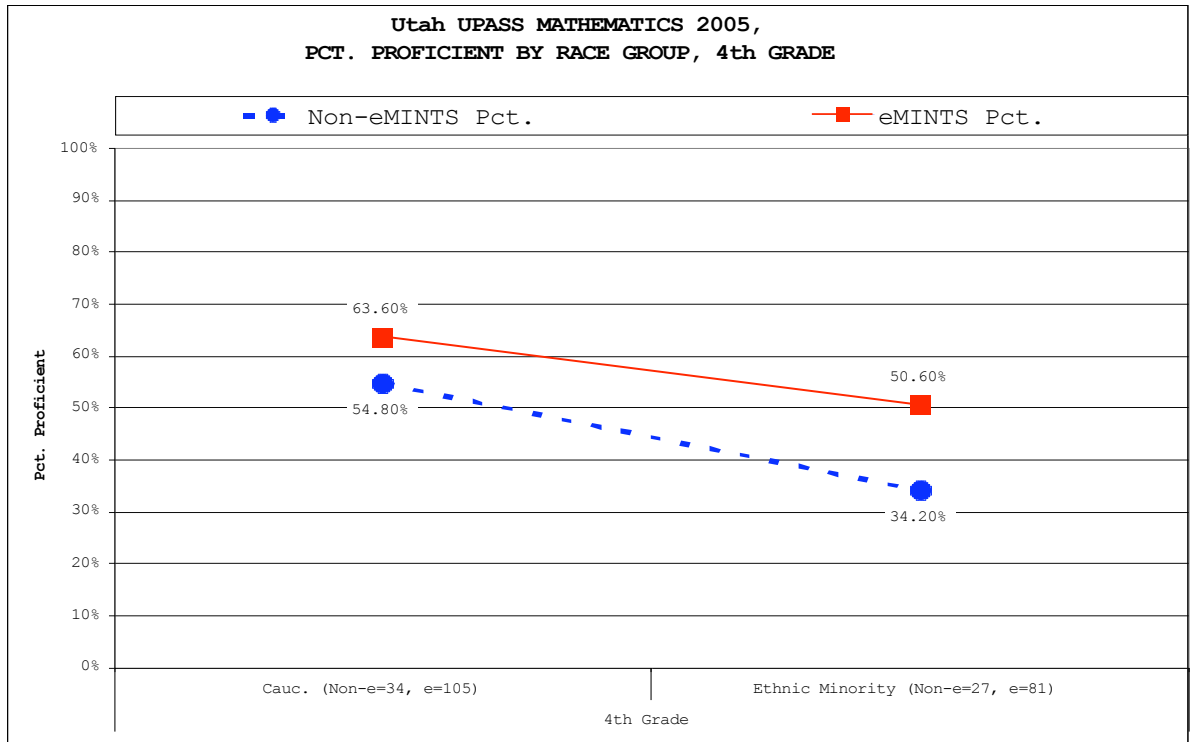


Figure 20
UPASS 2005 5th Grade Mathematics percent proficient by eMINTs participation
and Race Group

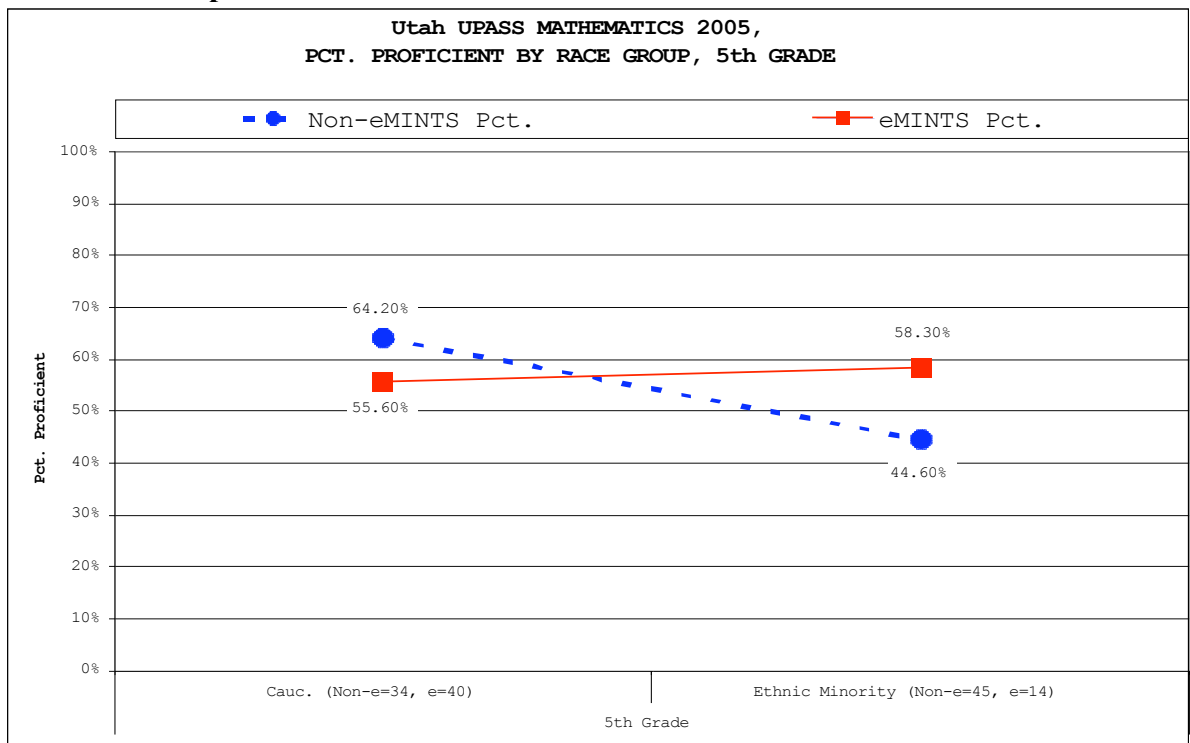


Figure 21
UPASS 2005 6th Grade Mathematics percent proficient by eMINTs participation
and Race Group

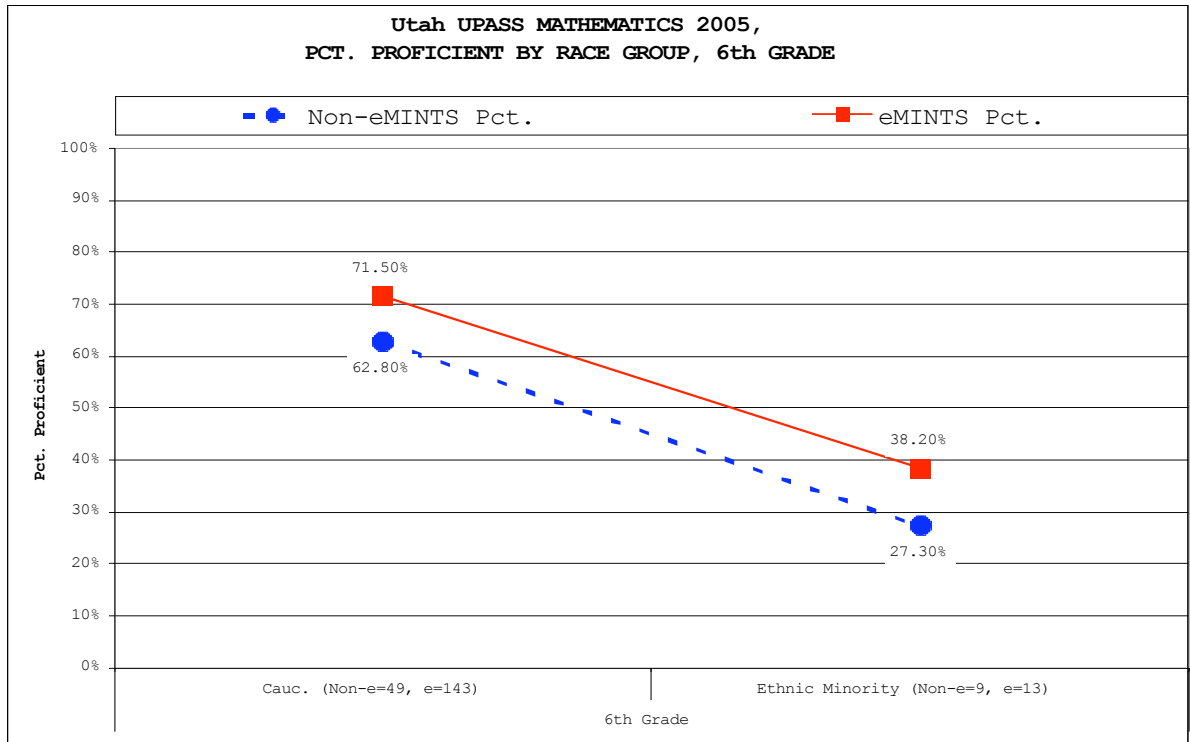


Figure 22
UPASS 2005 4th through 6th Grade Mathematics percent proficient by eMINTs
participation and Race Group

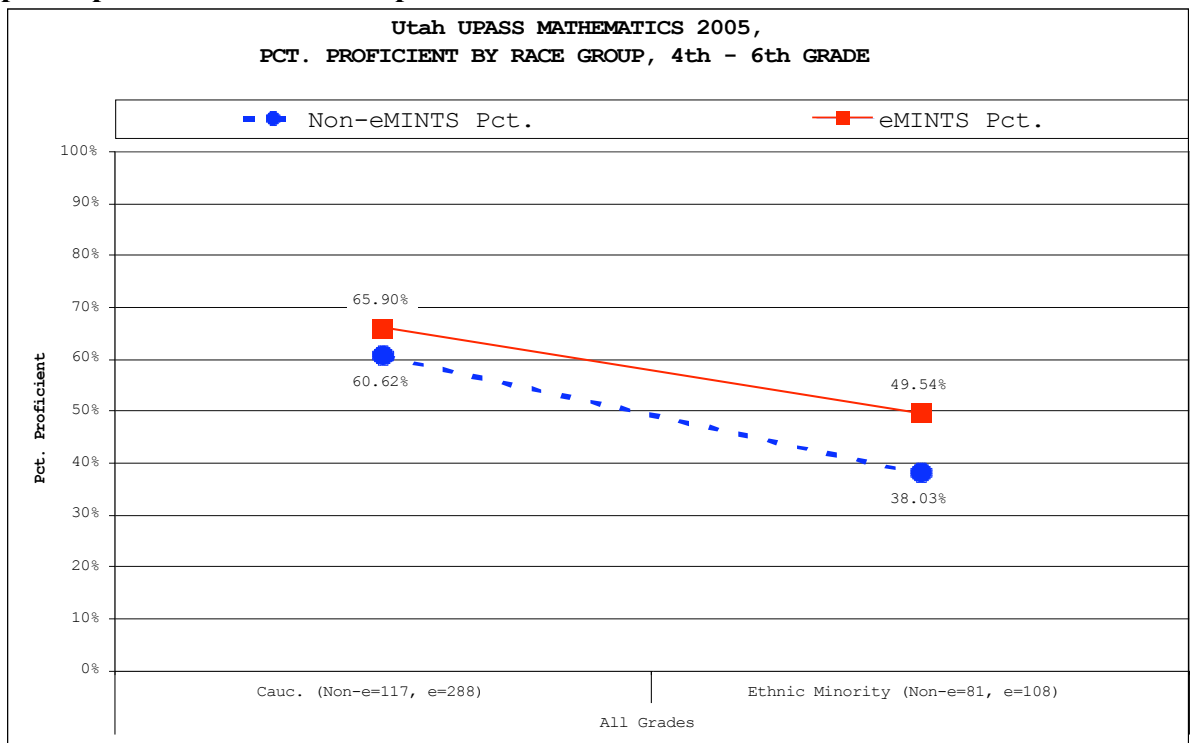


Table 12**UPASS 2005 Mathematics percent proficient by grade, eMINTs participation and F/R Lunch Status**

| UPASS Mathematics, eMINTS * Proficiency Level Crosstabulation, by F/R Lunch Status and Grade | | | | | | | |
|--|-----------|------------|---------|-------|------------------------------|-----------------|-----------------|
| Group | | Chi-Square | | | Percent Proficient, by Group | | |
| Grade | F/R Lunch | Chi Square | df (N) | Sig. | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | No | 1.485 | 1 (132) | 0.223 | (22) 59.50% | (67) 70.50% | (89) 67.40% |
| | Yes * | 5.825 | 1 (334) | 0.016 | (39) 37.50% | (119) 51.70% | (158) 47.30% |
| 5th Grade | No | 0.176 | 1 (63) | 0.674 | (20) 64.50% | (19) 59.40% | (39) 61.90% |
| | Yes | 0.760 | 1 (187) | 0.383 | (59) 48.00% | (35) 54.70% | (94) 50.30% |
| 6th Grade | No | 2.835 | 1 (146) | 0.092 | (28) 66.70% | (83) 79.80% | (111) 76.00% |
| | Yes | 2.901 | 1 (199) | 0.089 | (30) 43.50% | (73) 56.20% | (103) 51.80% |
| All Grades | No | 3.224 | 1 (341) | 0.073 | (70) 63.64% | (169) 73.16% | (239) 70.09% |
| | Yes * | 7.391 | 1 (720) | 0.007 | (128) 43.24% | (227) 53.54% | (355) 49.31% |

* eMINTs by proficient Chi-square significant, $p < 0.05$

A statistically significant relationship between eMINTS participation and mathematics proficiency was found for 4th grade F/R Lunch students and all F/R Lunch students independent of grade.

Figure 23
UPASS 2005 4th Grade Mathematics percent proficient by eMINTs participation
and F/R Lunch Status

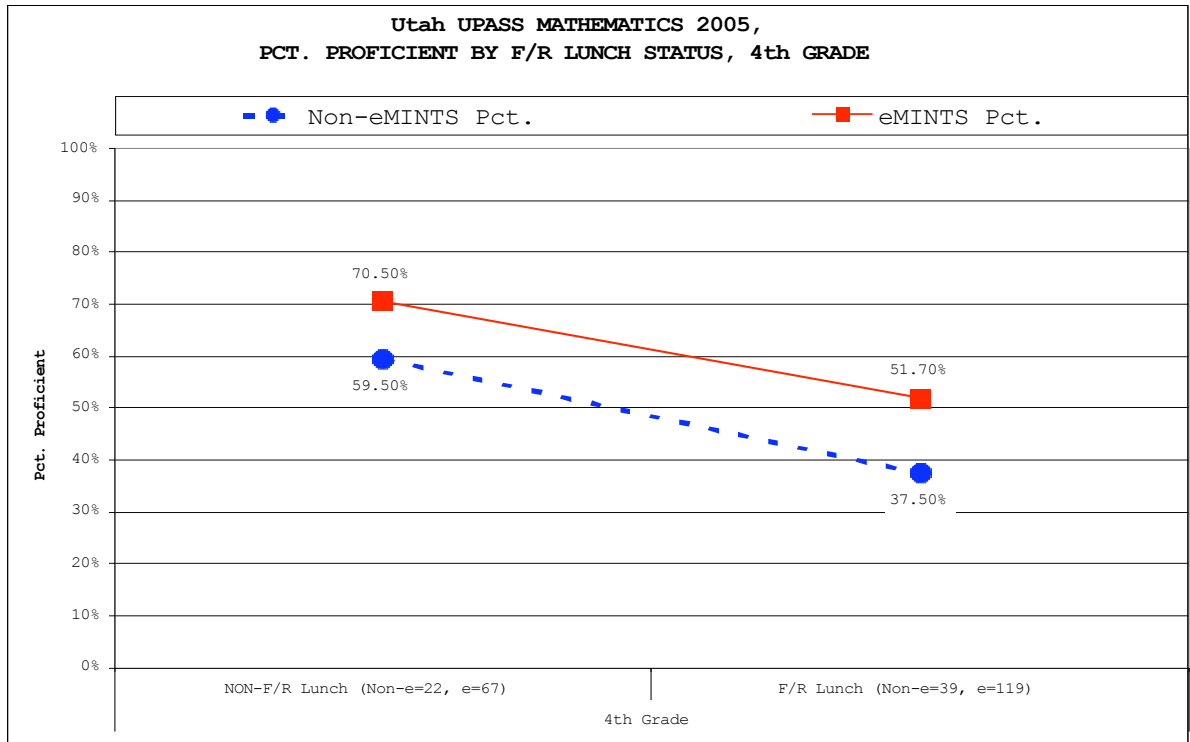


Figure 24
UPASS 2005 5th Grade Mathematics percent proficient by eMINTs participation
and F/R Lunch Status

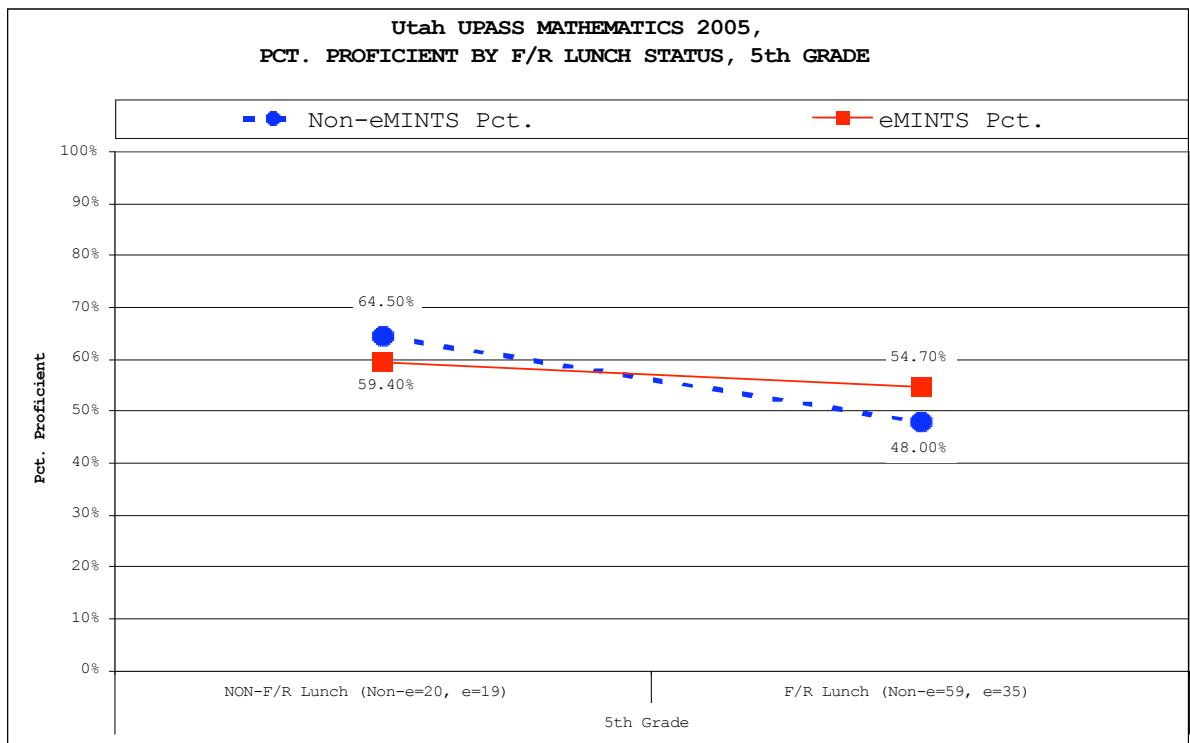


Figure 25
UPASS 2005 6th Grade Mathematics percent proficient by eMINTs participation
and F/R Lunch Status

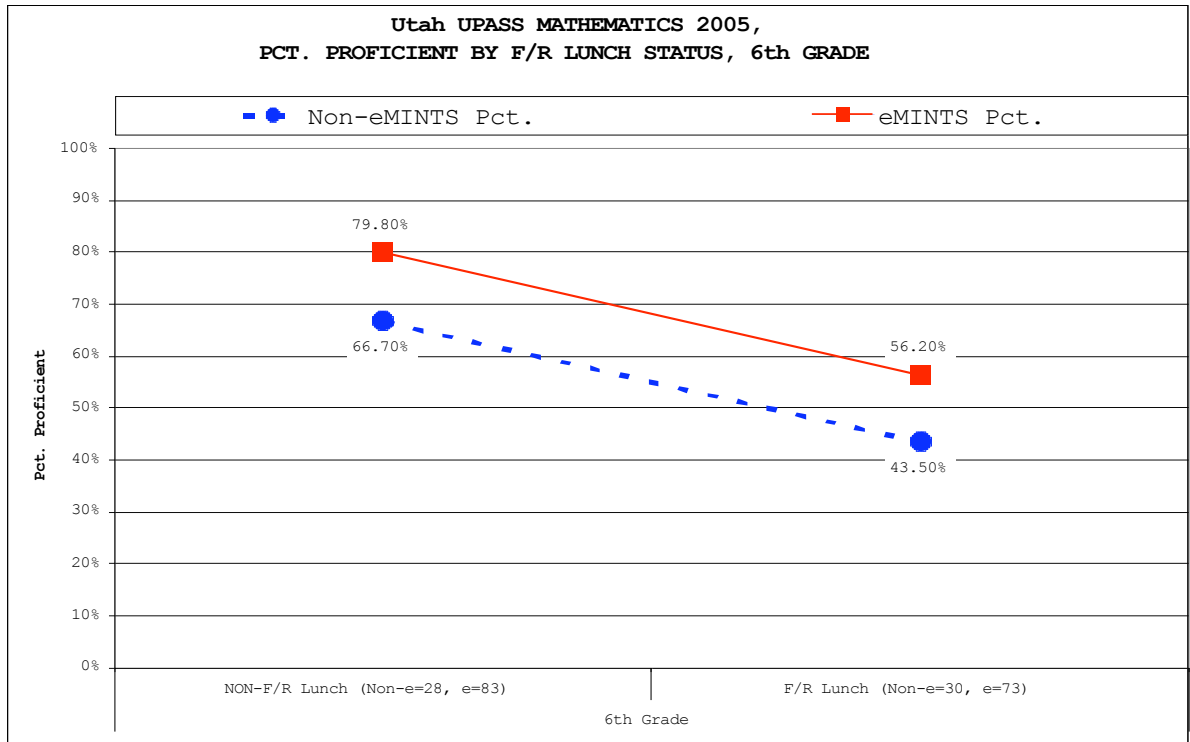


Figure 26
UPASS 2005 4th through 6th Grade Mathematics percent proficient by eMINTs
participation and F/R Lunch Status

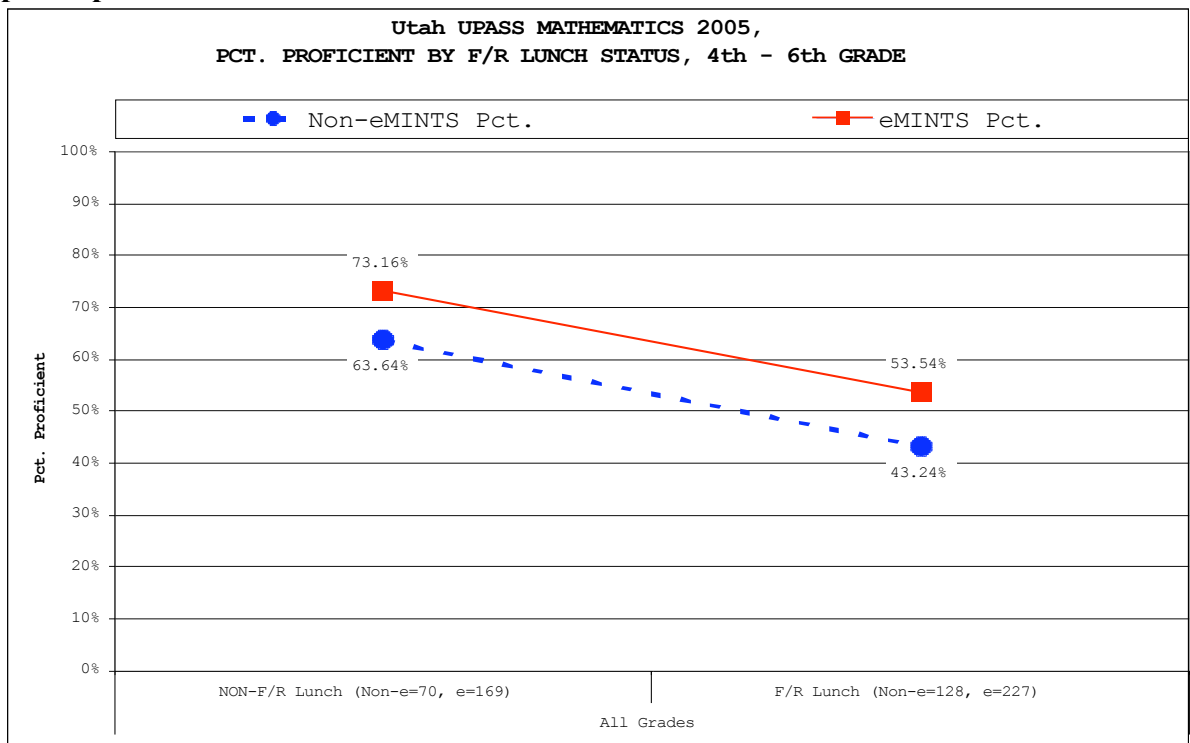


Table 13
UPASS 2005 Mathematics percent proficient by grade, eMINTs participation and LEP Status

| UPASS Mathematics, eMINTS * Proficiency Level Crosstabulation, by LEP Status and Grade | | | | | | | |
|--|------------|------------|---------|------------------------------|---------------------|-----------------|-----------------|
| Group | | Chi-Square | | Percent Proficient, by Group | | | |
| Grade | LEP Status | Chi Square | df (N) | Sig. | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | No | 3.659 | 1 (287) | 0.056 | (38) 49.40% | (130) 61.90% | (168) 58.50% |
| | Yes | 2.714 | 1 (179) | 0.099 | (23) 35.90% | (56) 48.70% | (79) 44.10% |
| 5th Grade | No | 0.366 | 1 (154) | 0.545 | (47) 59.50% | (41) 54.70% | (88) 57.10% |
| | Yes | 2.438 | 1 (96) | 0.118 | (32) 42.70% | (13) 61.90% | (45) 46.90% |
| 6th Grade | No | 3.434 | 1 (315) | 0.064 | (54) 57.40% | (151) 68.30% | (205) 65.10% |
| | Yes | 0.782 | 1 (30) | 0.376 | (4) 23.50% | (5) 38.50% | (9) 30.00% |
| All Grades | No * | 4.542 | 1 (756) | 0.033 | (139) 55.60% | (322) 63.64% | (461) 60.98% |
| | Yes * | 4.347 | 1 (305) | 0.037 | (59) 37.82% | (74) 49.66% | (133) 43.61% |

* eMINTs by proficient Chi-square significant, $p < 0.05$

A statistically significant relationship between eMINTS participation and mathematics proficiency was found for both LEP and non-LEP students independent of grade.

Figure 27
UPASS 2005 4th Grade Mathematics percent proficient by eMINTs participation
and LEP Status

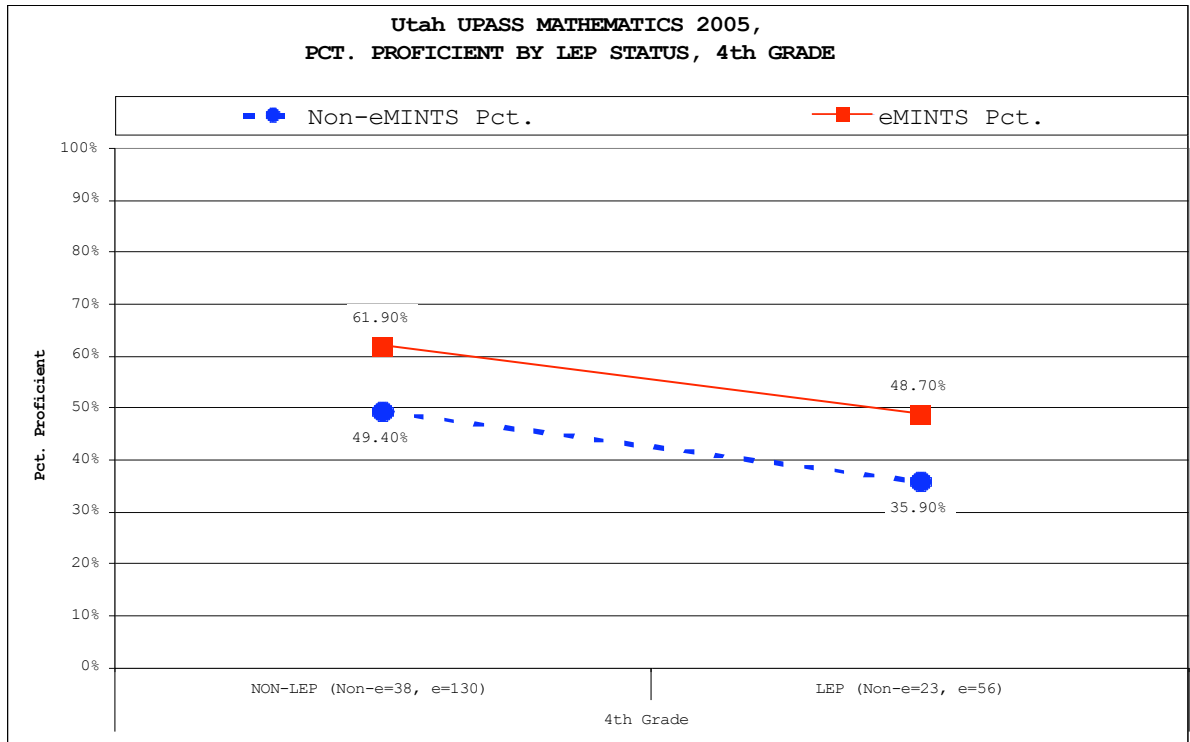


Figure 28
UPASS 2005 5th Grade Mathematics percent proficient by eMINTs participation
and LEP Status

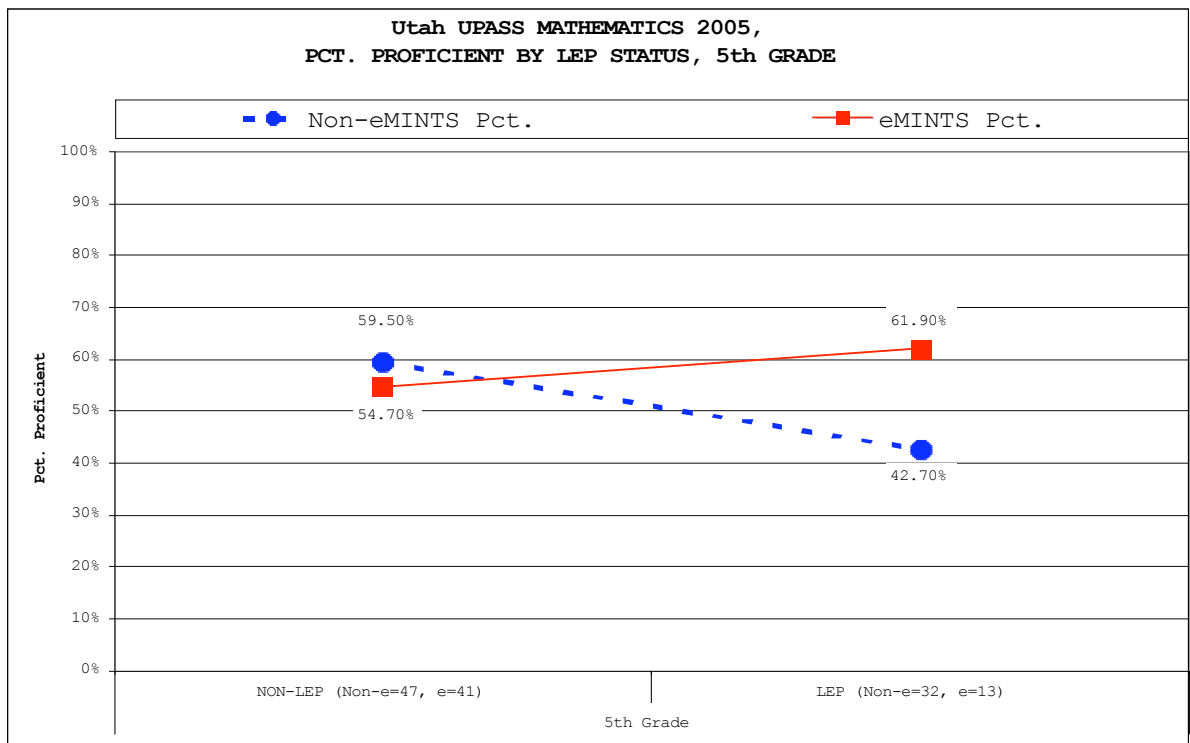


Figure 29
UPASS 2005 6th Grade Mathematics percent proficient by eMINTs participation
and LEP Status

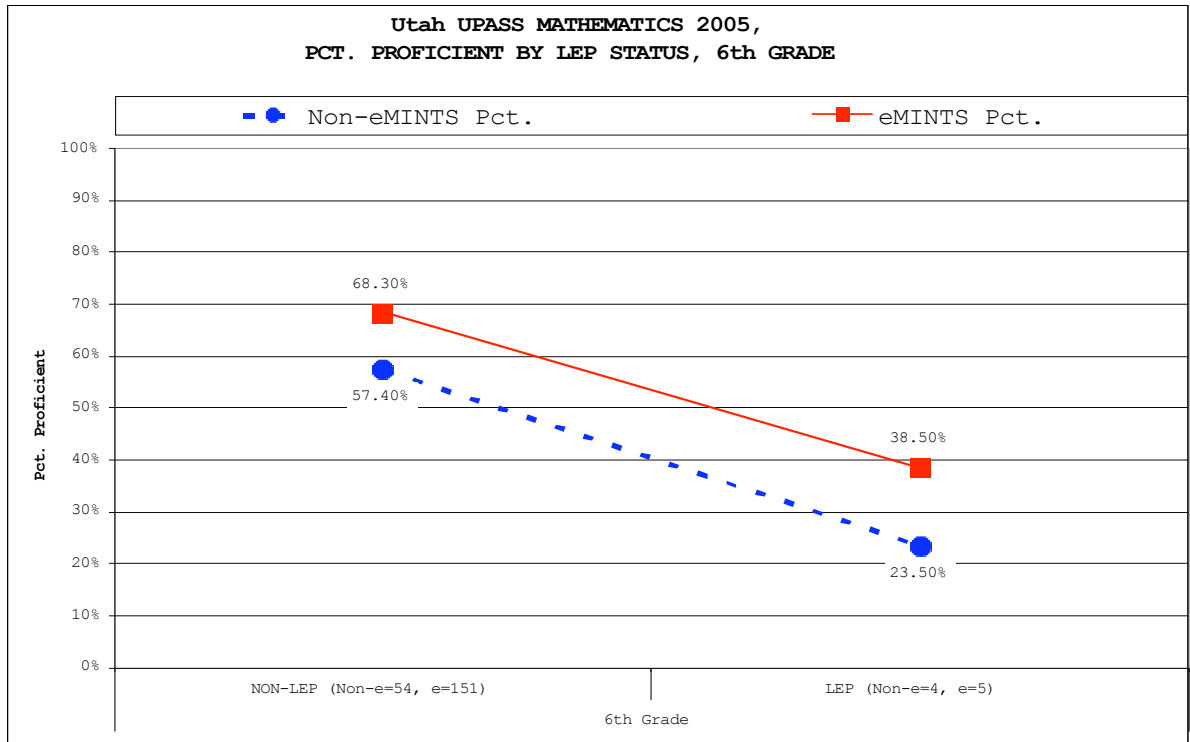


Figure 30
UPASS 2005 4th through 6th Grade Mathematics percent proficient by eMINTs
participation and LEP Status

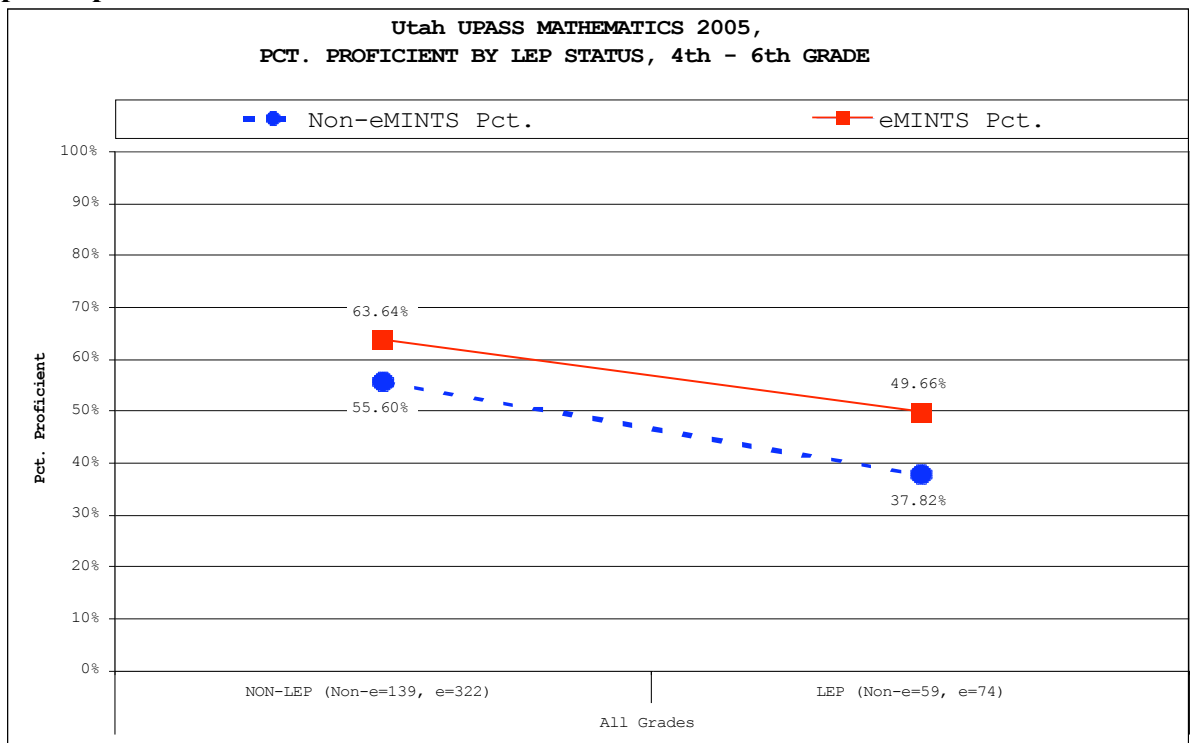


Table 14**UPASS 2005 Mathematics percent proficient by grade, eMINTs participation and Special Education Status**

| UPASS Mathematics, eMINTS * Proficiency Level Crosstabulation, by Spec. Ed. Status and Grade | | | | | | | |
|--|------------------|------------|---------|-------|------------------------------|-----------------|-----------------|
| Group | | Chi-Square | | | Percent Proficient, by Group | | |
| Grade | Spec. Ed. Status | Chi Square | df (N) | Sig. | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | No * | 4.752 | 1 (377) | 0.029 | (57) 50.40% | (165) 62.50% | (222) 58.90% |
| | Yes * | 3.854 | 1 (89) | 0.050 | (4) 14.30% | (21) 34.40% | (25) 28.10% |
| 5th Grade | No | 1.316 | 1 (212) | 0.251 | (72) 55.00% | (51) 63.00% | (123) 58.00% |
| | Yes | 0.510 | 1 (38) | 0.475 | (7) 30.40% | (3) 20.00% | (10) 26.30% |
| 6th Grade | No * | 11.616 | 1 (299) | 0.001 | (55) 55.60% | (150) 75.00% | (205) 68.60% |
| | Yes | 0.305 | 1 (46) | 0.581 | (3) 25.00% | (6) 17.60% | (9) 19.60% |
| All Grades | No * | 16.302 | 1 (888) | 0.000 | (184) 53.64% | (366) 67.16% | (550) 61.94% |
| | Yes | 0.539 | 1 (173) | 0.463 | (14) 22.22% | (30) 27.27% | (44) 25.43% |

* eMINTs by proficient Chi-square significant, $p < 0.05$

A statistically significant relationship between eMINTS participation and mathematics proficiency was found for both Special Ed. and non-Special Ed. students in the 4th grade, for non-Special Ed. students in the 6th grade, and for non-Special Ed. students independent of grade.

Figure 31
UPASS 2005 4th Grade Mathematics percent proficient by eMINTs participation
and Special Education Status

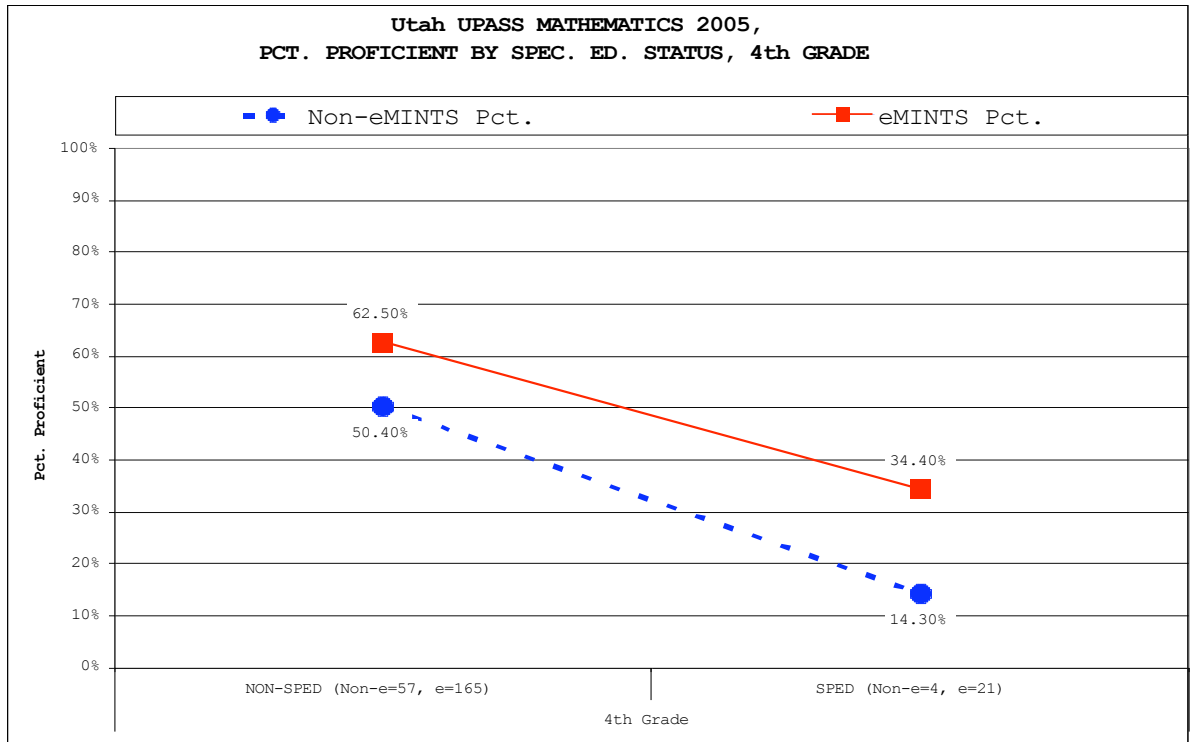


Figure 32
UPASS 2005 5th Grade Mathematics percent proficient by eMINTs participation
and Special Education Status

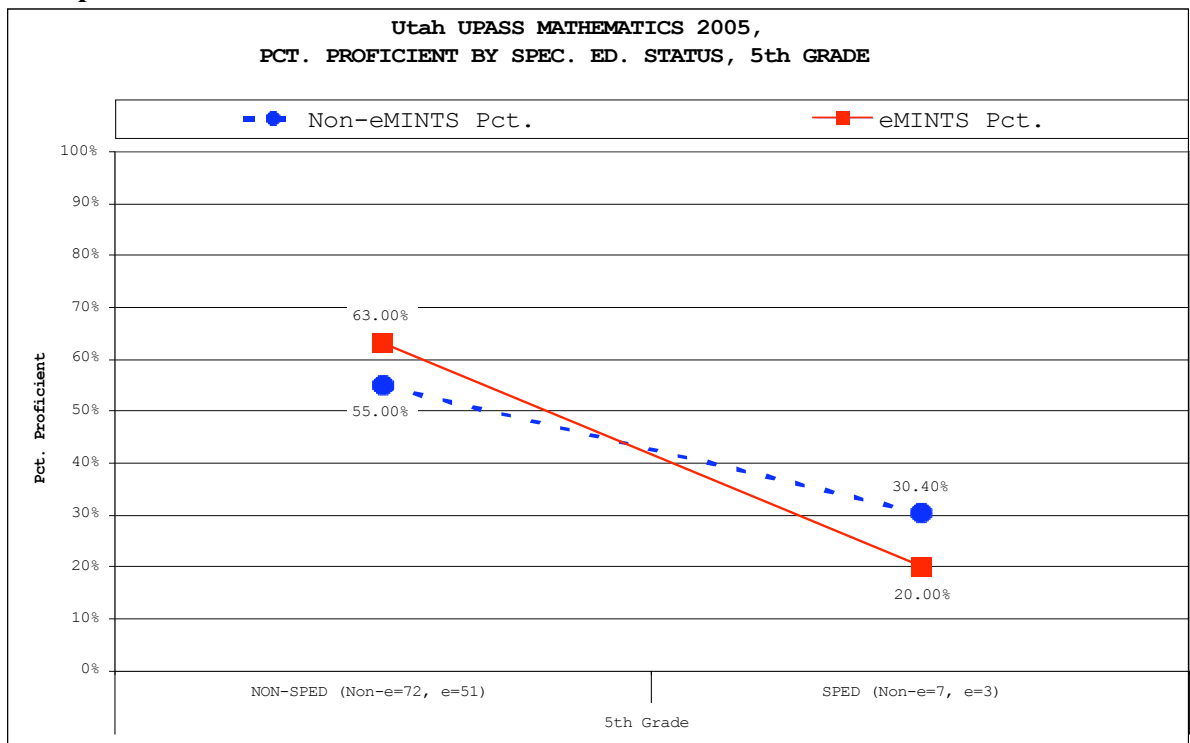


Figure 33
UPASS 2005 6th Grade Mathematics percent proficient by eMINTs participation
and Special Education Status

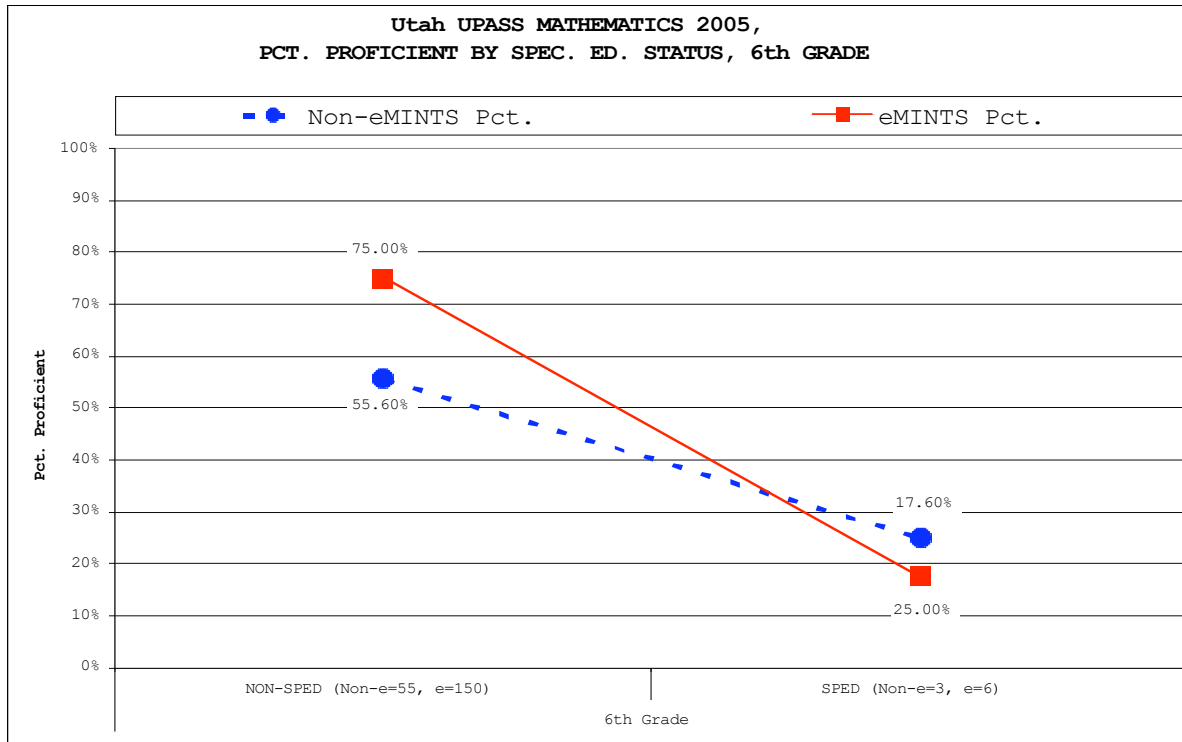
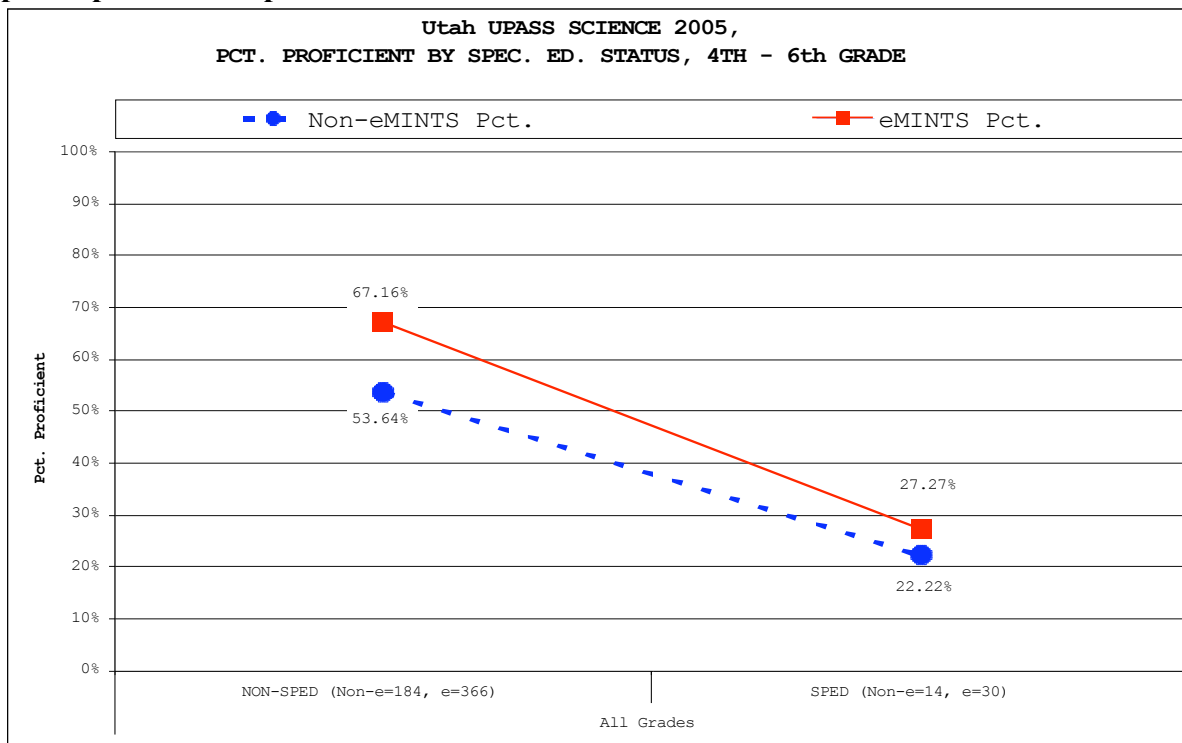


Figure 34
UPASS 2005 4th through 6th Grade Mathematics percent proficient by eMINTs
participation and Special Education Status



Science Results

A statistically significant relationship between eMINTS participation and science proficiency was found for 4th grade students independent of demographic characteristics and for all students independent of grade and demographic group.

Table 15

UPASS 2005 Science percent proficient by grade and eMINTs participation

| UPASS Science, eMINTS * Proficiency Level Crosstabulation, by eMINTS Status | | | | | | | |
|---|--------------|------------|---------|-----------------------|------------------------------|-----------------|----------------|
| Group | | Chi-Square | | | Percent Proficient, by Group | | |
| Grade | Group | Chi-Square | df (N) | Asymp. Sig. (2-sided) | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | All Groups * | 6.604 | 1 (467) | 0.01 | (38) 26.57% | (126) 38.89% | (164) 35.10% |
| 5th Grade | All Groups | 0.027 | 1 (111) | 0.869 | (15) 33.33% | (23) 34.85% | (38) 34.20% |
| 6th Grade | All Groups | 2.412 | 1 (344) | 0.12 | (57) 51.82% | (142) 60.68% | (199) 57.80% |
| All Grades | All Groups * | 7.756 | 1 (922) | .005 | (110) 36.90% | (291) 46.60% | (401) 43.50% |

* eMINTs by proficient Chi-square significant, $p < 0.05$

Figure 35

UPASS 2005 4th through 6th Grade Science percent proficient by eMINTs participation

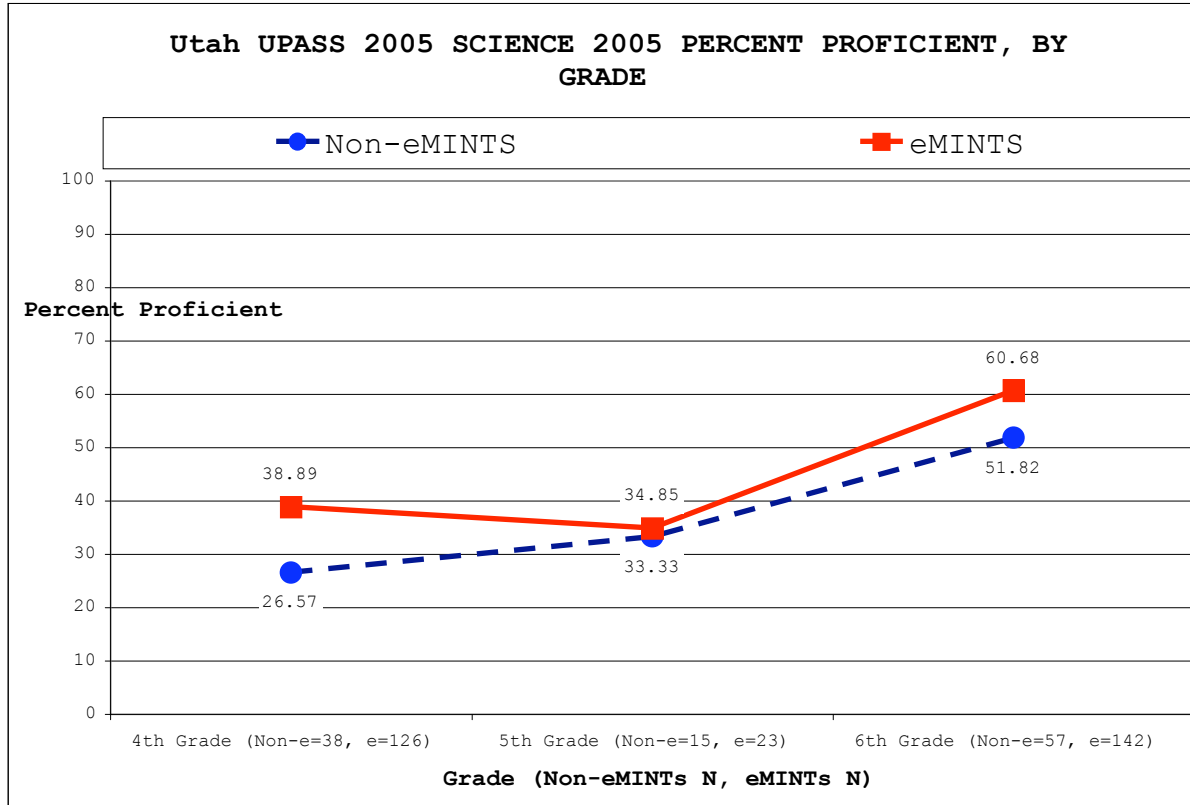


Table 16**UPASS 2005 Science percent proficient by grade, eMINTs participation and Race Group**

| UPASS Science, eMINTS * Proficiency Level Crosstabulation, by Race Group and Grade | | | | | | | |
|--|-------------------|------------|---------|------------------------------|---------------------|-----------------|-----------------|
| Group | | Chi-Square | | Percent Proficient, by Group | | | |
| Grade | Race Group | Chi Square | df (N) | Sig. | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | Caucasian | 1.062 | 1 (226) | 0.303 | (24) 38.70% | (76) 46.30% | (100) 44.20% |
| | Ethnic Minority * | 5.378 | 1 (241) | 0.020 | (14) 17.30% | (50) 31.30% | (64) 26.60% |
| 5th Grade | Caucasian | 0.010 | 1 (94) | 0.922 | (14) 40.00% | (23) 39.00% | (37) 39.40% |
| | Ethnic Minority | 0.744 | 1 (17) | 0.388 | (1) 10.00% | (0) 00.00% | (1) 05.90% |
| 6th Grade | Caucasian | 0.596 | 1 (277) | 0.440 | (49) 63.60% | (137) 68.50% | (186) 67.10% |
| | Ethnic Minority | 0.974 | 1 (67) | 0.324 | (8) 24.20% | (5) 14.70% | (13) 19.40% |
| All Grades | Caucasian | 1.666 | 1 (597) | 0.197 | (87) 50.00% | (236) 55.79% | (323) 54.10% |
| | Ethnic Minority | 3.267 | 1 (325) | 0.071 | (23) 18.55% | (55) 27.36% | (78) 24.00% |

* eMINTs by proficient Chi-square significant, $p < 0.05$

A statistically significant relationship between eMINTS participation and science proficiency was found for Ethnic Minority 4th grade students.

Figure 36
UPASS 2005 4th Grade Science percent proficient by eMINTs participation and Race Group

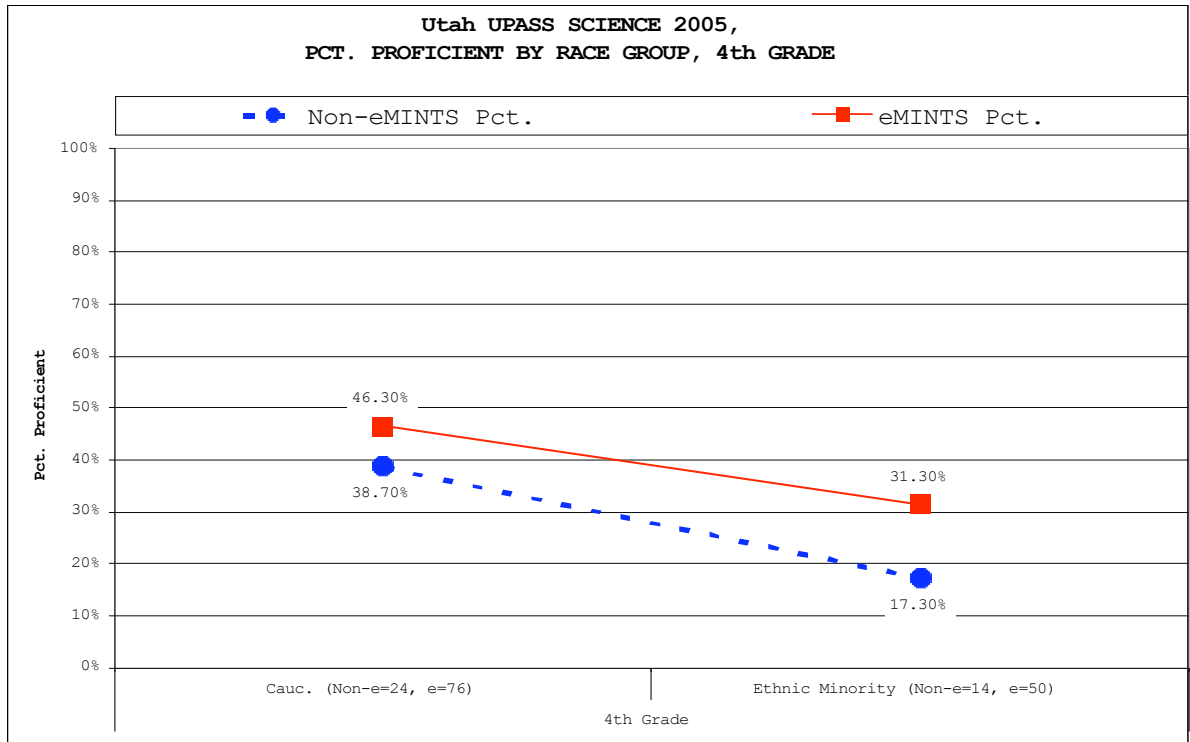


Figure 37
UPASS 2005 5th Grade Science percent proficient by eMINTs participation and Race Group

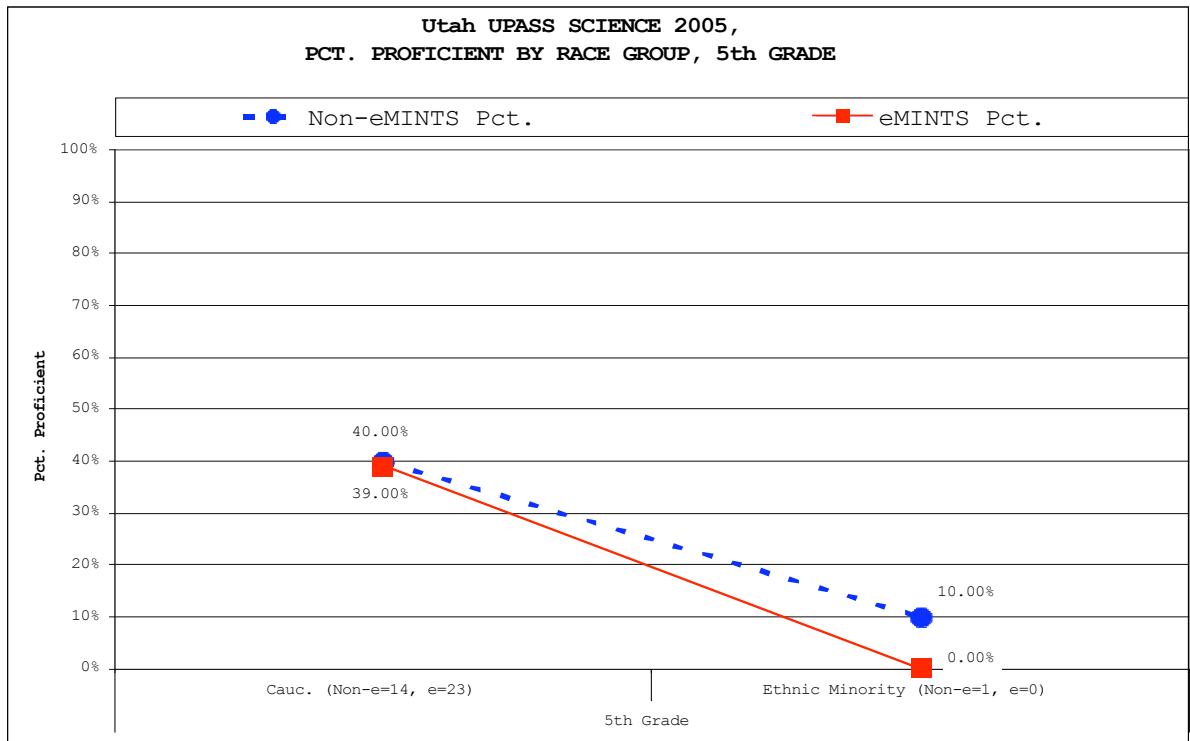


Figure 38
UPASS 2005 6th Grade Science percent proficient by eMINTs participation and Race Group

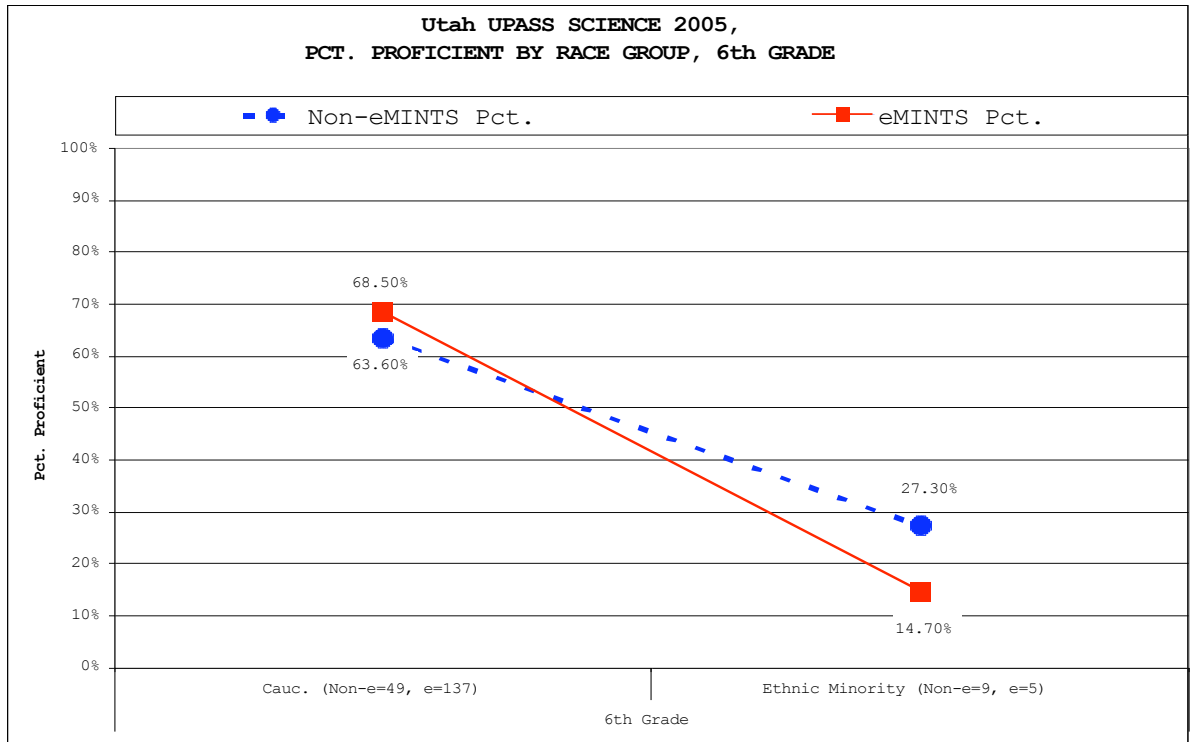


Figure 39
UPASS 2005 4th through 6th Grade Science percent proficient by eMINTs participation and Race Group

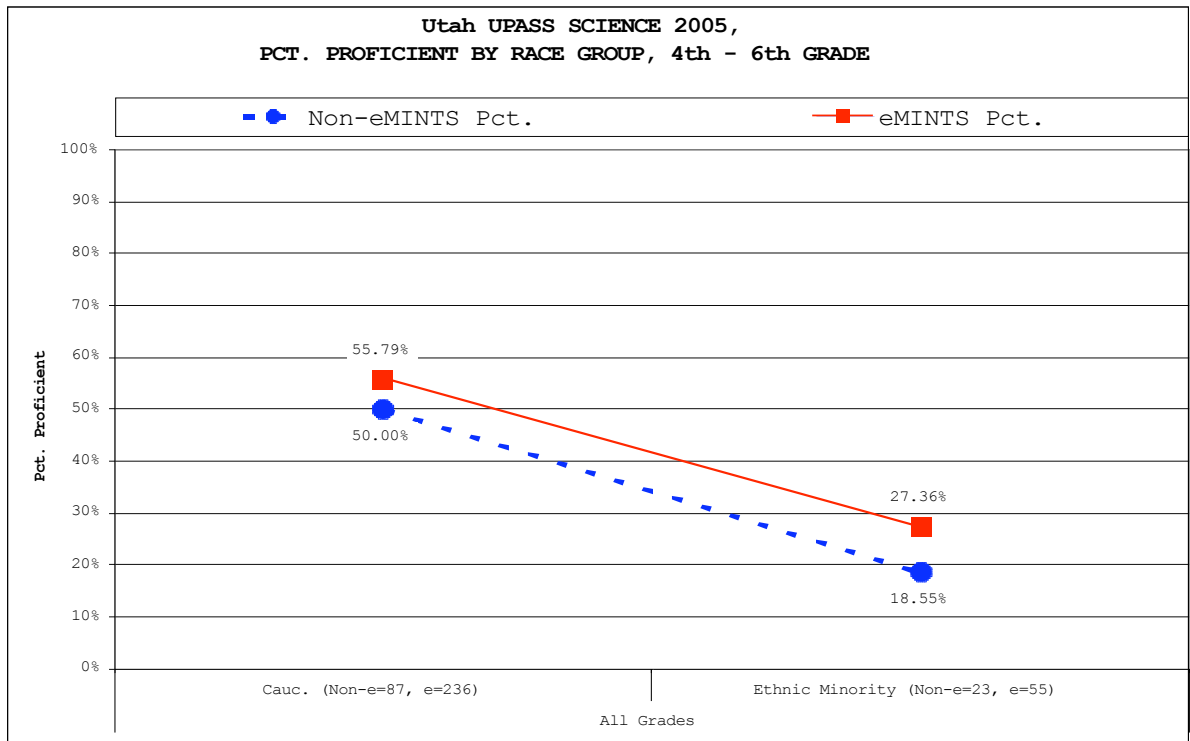


Table 17**UPASS 2005 Science percent proficient by grade, eMINTs participation and F/R Lunch Status**

| UPASS Science, eMINTS * Proficiency Level Crosstabulation, by F/R Lunch Status and Grade | | | | | | | |
|--|-----------|------------|---------|-------|------------------------------|-----------------|-----------------|
| Group | | Chi-Square | | | Percent Proficient, by Group | | |
| Grade | F/R Lunch | Chi Square | df (N) | Sig. | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | No | 1.851 | 1 (130) | 0.174 | (15) 40.50% | (50) 53.80% | (65) 50.00% |
| | Yes * | 4.395 | 1 (337) | 0.036 | (23) 21.70% | (76) 32.90% | (99) 29.40% |
| 5th Grade | No | 3.607 | 1 (51) | 0.058 | (7) 29.20% | (15) 55.60% | (22) 43.10% |
| | Yes | 2.158 | 1 (60) | 0.142 | (8) 38.10% | (8) 20.50% | (16) 26.70% |
| 6th Grade | No | 1.316 | 1 (145) | 0.251 | (26) 63.40% | (76) 73.10% | (102) 70.30% |
| | Yes | 0.616 | 1 (199) | 0.433 | (31) 44.90% | (66) 50.80% | (97) 48.70% |
| All Grades | No * | 7.261 | 1 (326) | 0.007 | (48) 47.06% | (141) 62.95% | (189) 57.98% |
| | Yes | 1.976 | 1 (596) | 0.160 | (62) 31.63% | (150) 37.50% | (212) 35.57% |

* eMINTs by proficient Chi-square significant, $p < 0.05$

A statistically significant relationship between eMINTS participation and science proficiency was found for F/R Lunch 4th grade students and for non-F/R Lunch students independent of grade.

Figure 40
UPASS 2005 4th Grade Science percent proficient by eMINTs participation and F/R Lunch Status

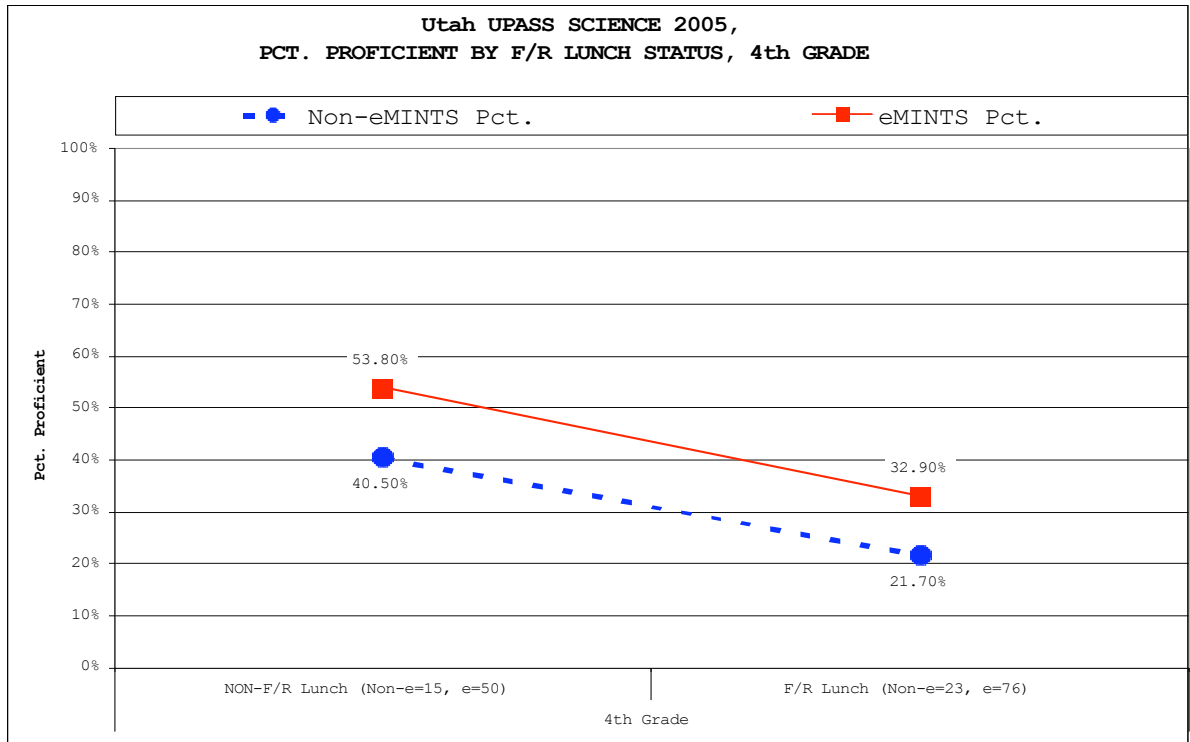


Figure 41
UPASS 2005 5th Grade Science percent proficient by eMINTs participation and F/R Lunch Status

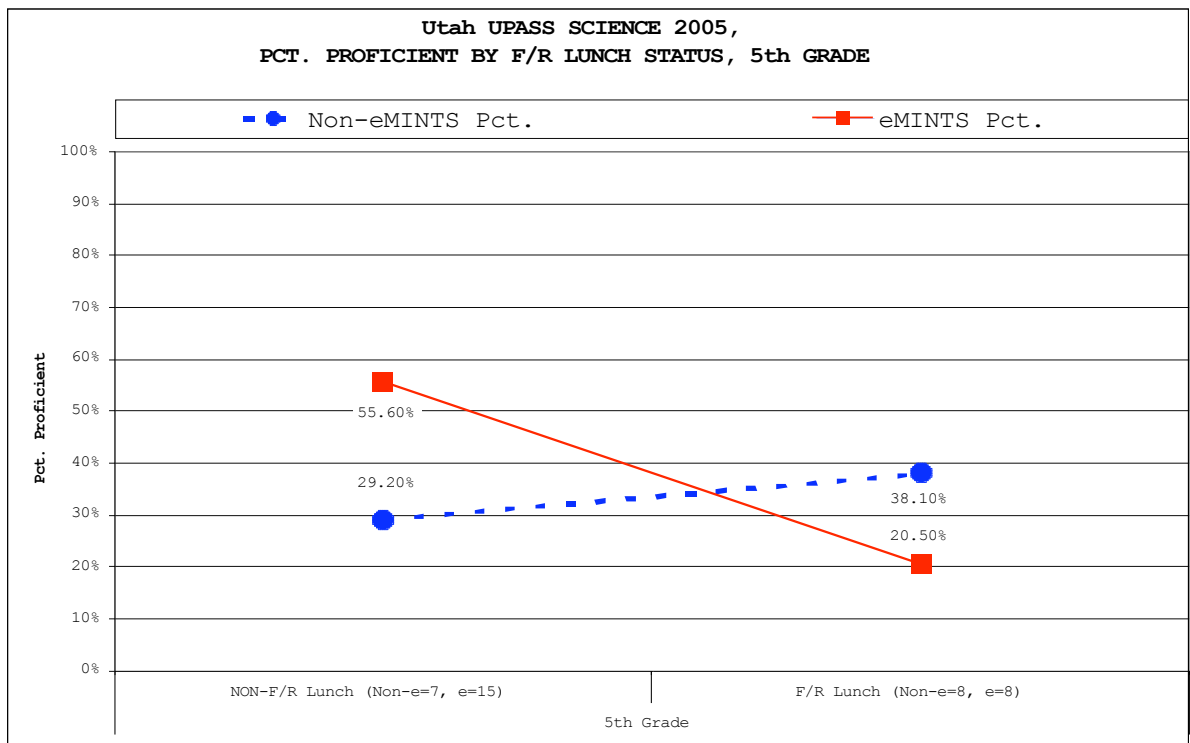


Figure 42
UPASS 2005 6th Grade Science percent proficient by eMINTs participation and F/R Lunch Status

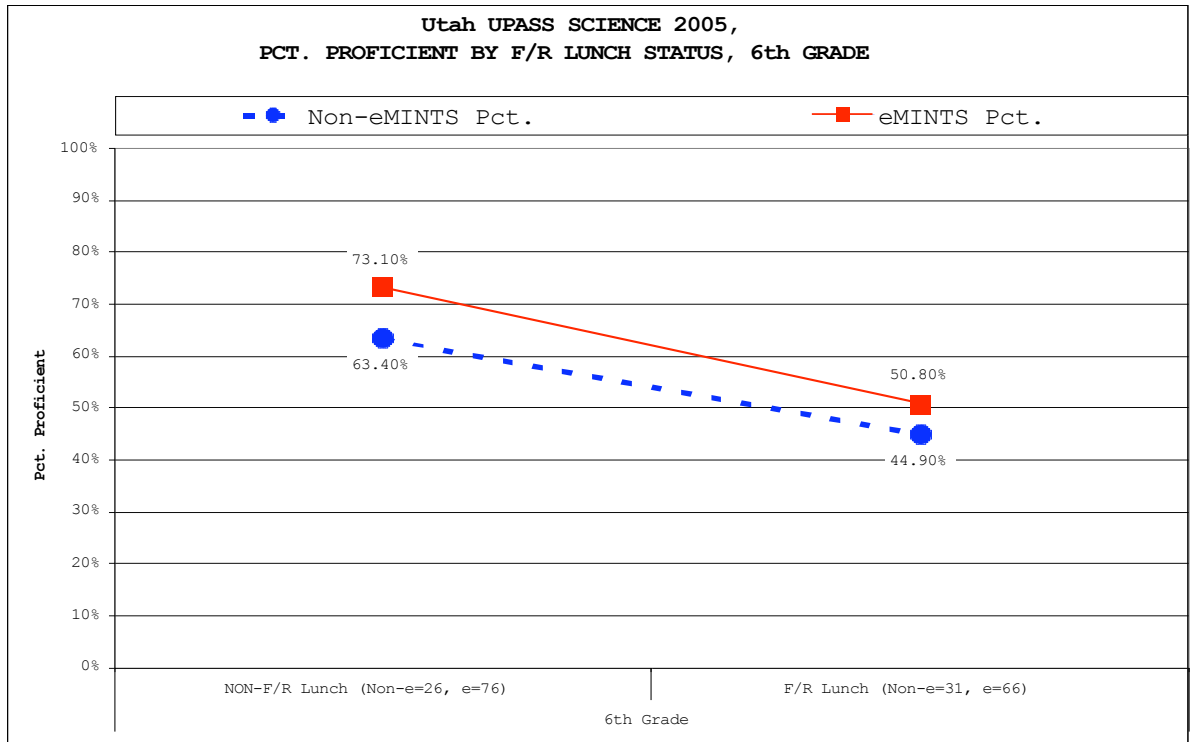


Figure 43
UPASS 2005 4th through 6th Grade Science percent proficient by eMINTs participation and F/R Lunch Status

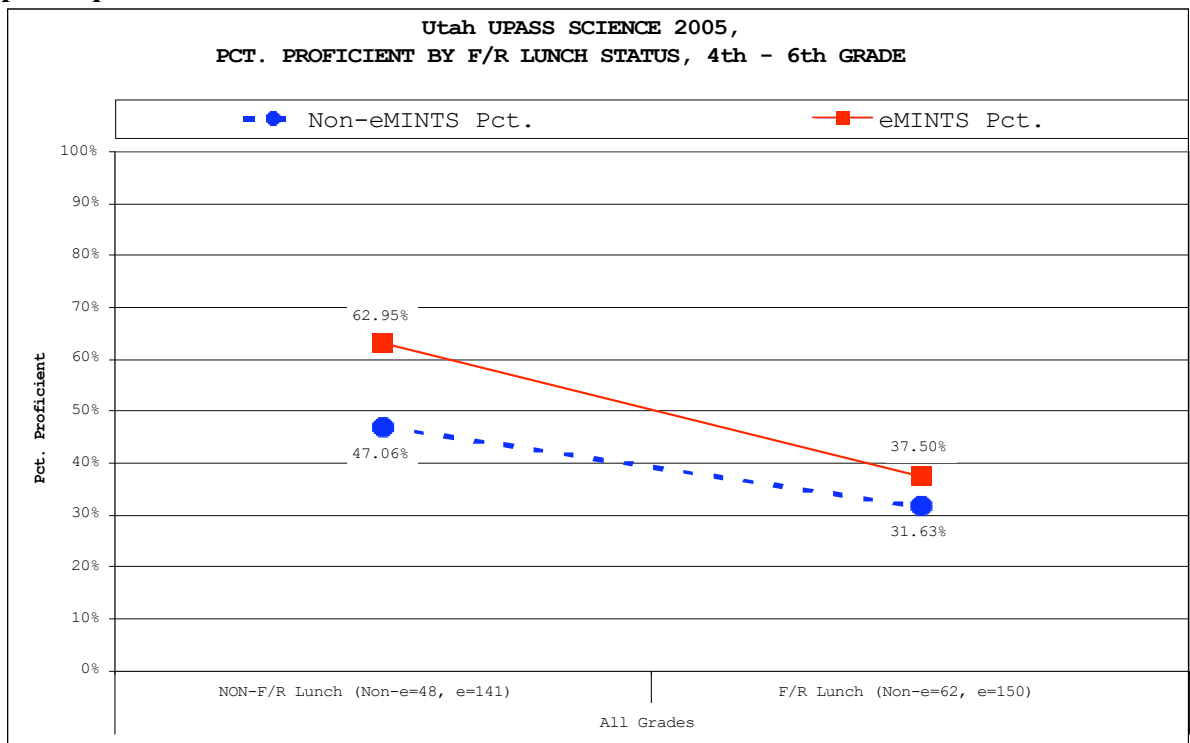


Table 18**UPASS 2005 Science percent proficient by grade, eMINTs participation and LEP Status**

| Group | | Chi-Square | | | Percent Proficient, by Group | | |
|------------|------------|------------|---------|-------|------------------------------|-----------------|-----------------|
| Grade | LEP Status | Chi Square | df (N) | Sig. | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | No | 2.686 | 1 (284) | 0.101 | (27) 35.10% | (95) 45.90% | (122) 43.00% |
| | Yes | 2.305 | 1 (183) | 0.129 | (11) 16.70% | (31) 26.50% | (42) 23.00% |
| 5th Grade | No | 0.047 | 1 (97) | 0.829 | (15) 40.50% | (23) 38.30% | (38) 39.20% |
| | Yes | N/A | N/A | N/A | (0) 00.00% | (0) 00.00% | (0) 00.00% |
| 6th Grade | No | 0.528 | 1 (314) | 0.467 | (54) 58.10% | (138) 62.40% | (192) 61.10% |
| | Yes | 0.709 | 1 (30) | 0.400 | (3) 17.60% | (4) 30.80% | (7) 23.30% |
| All Grades | No | 2.151 | 1 (695) | 0.142 | (96) 46.38% | (256) 52.46% | (352) 50.65% |
| | Yes | 3.451 | 1 (227) | 0.063 | (14) 15.38% | (35) 25.74% | (49) 21.59% |

* eMINTs by proficient Chi-square significant, $p < 0.05$

No statistically significant relationship between eMINTS participation and science proficiency was found for any LEP group by grade or independent of grade.

Figure 44
UPASS 2005 4th Grade Science percent proficient by eMINTs participation and LEP Status

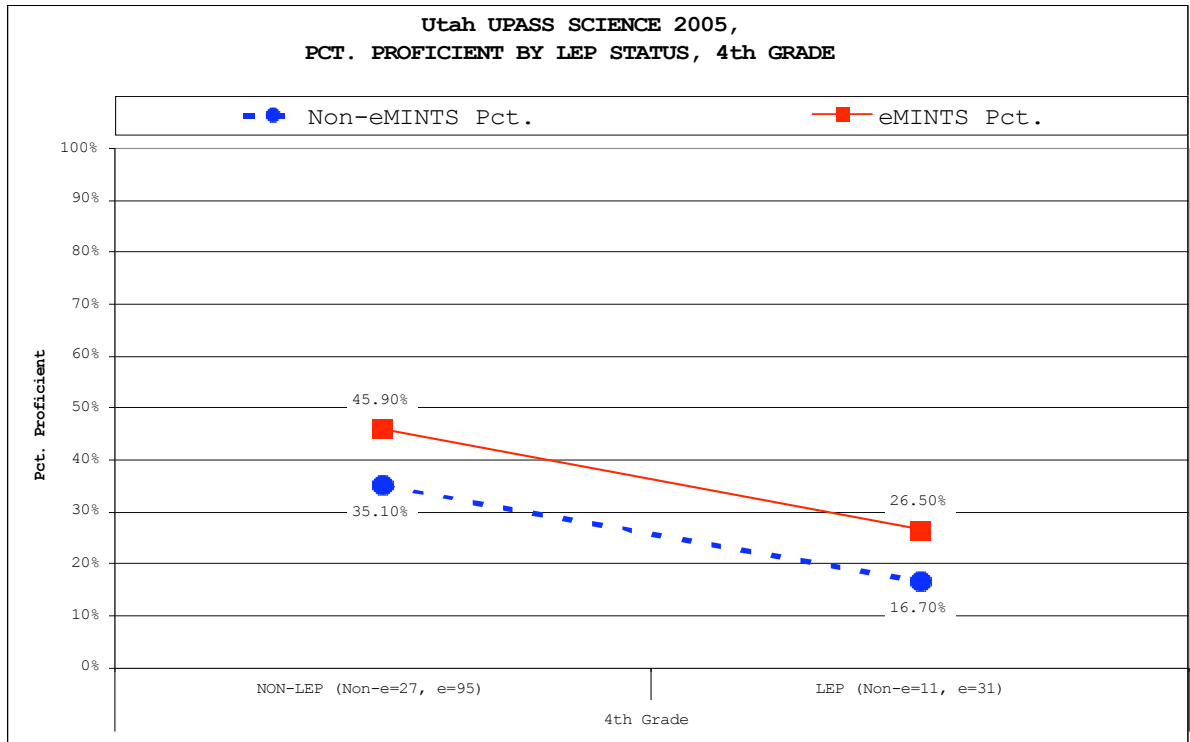


Figure 45
UPASS 2005 5th Grade Science percent proficient by eMINTs participation and LEP Status

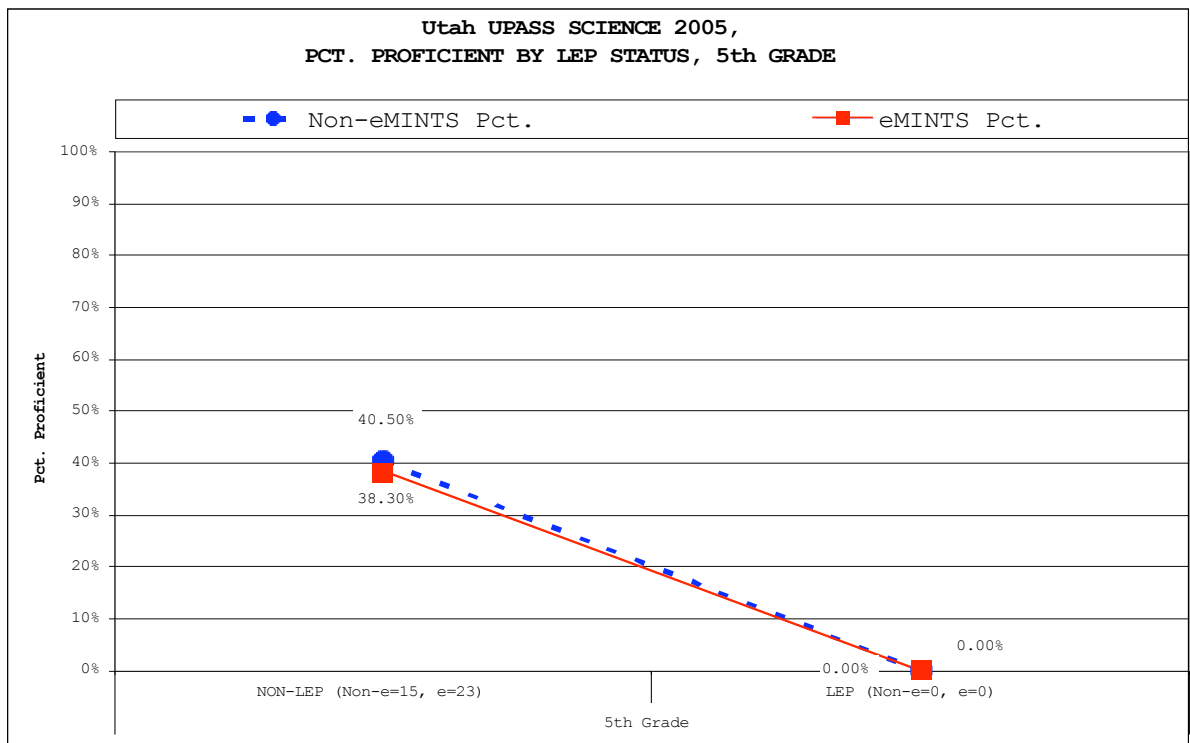


Figure 46
UPASS 2005 6th Grade Science percent proficient by eMINTs participation and LEP Status

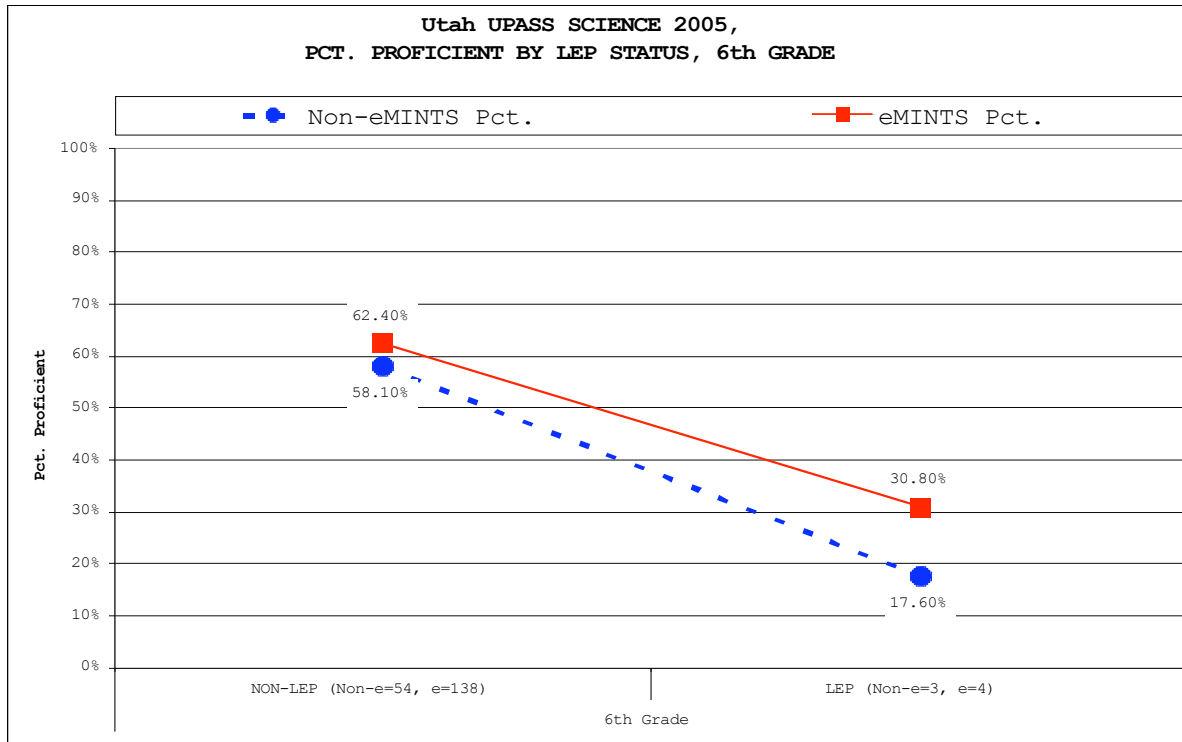


Figure 47
UPASS 2005 4th through 6th Grade Science percent proficient by eMINTs participation and LEP Status

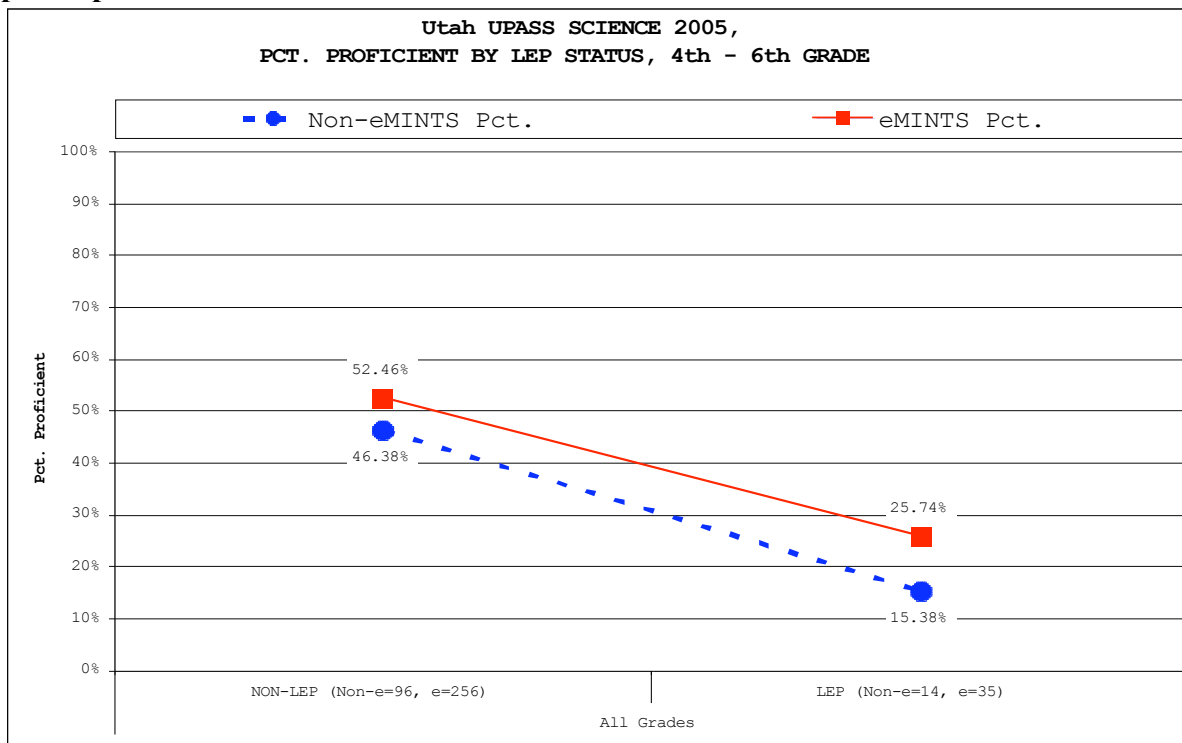


Table 19**UPASS 2005 Science percent proficient by grade, eMINTs participation and Special Education Status**

| UPASS Science, eMINTS * Proficiency Level Crosstabulation, by Special Ed. Status and Grade | | | | | | | |
|--|------------------|------------|---------|-------|------------------------------|-----------------|-----------------|
| Group | | Chi-Square | | | Percent Proficient, by Group | | |
| Grade | Spec. Ed. Status | Chi Square | df (N) | Sig. | Non-eMINTS (N) Pct. | eMINTS (N) Pct. | Total (N) Pct. |
| 4th Grade | No * | 6.105 | 1 (380) | 0.013 | (34) 29.60% | (114) 43.00% | (148) 38.90% |
| | Yes | 0.464 | 1 (87) | 0.496 | (4) 14.30% | (12) 20.30% | (16) 18.40% |
| 5th Grade | No | 0.013 | 1 (99) | 0.908 | (15) 35.70% | (21) 36.80% | (36) 36.40% |
| | Yes | 0.800 | 1 (12) | 0.371 | (0) 00.00% | (2) 22.20% | (2) 16.70% |
| 6th Grade | No * | 4.070 | 1 (298) | 0.044 | (56) 57.10% | (138) 69.00% | (194) 65.10% |
| | Yes | 0.108 | 1 (46) | 0.743 | (1) 08.30% | (4) 11.80% | (5) 10.90% |
| All Grades | No * | 8.483 | 1 (777) | 0.004 | (105) 41.18% | (273) 52.30% | (378) 48.65% |
| | Yes | 0.821 | 1 (145) | 0.365 | (5) 11.63% | (18) 17.65% | (23) 15.86% |

* eMINTs by proficient Chi-square significant, $p < 0.05$

A statistically significant relationship between eMINTS participation and science proficiency was found for non-Special Ed. 4th and 6th grade students and for non-Special Ed. students independent of grade.

Figure 48
UPASS 2005 4th Grade Science percent proficient by eMINTs participation and Special Education Status

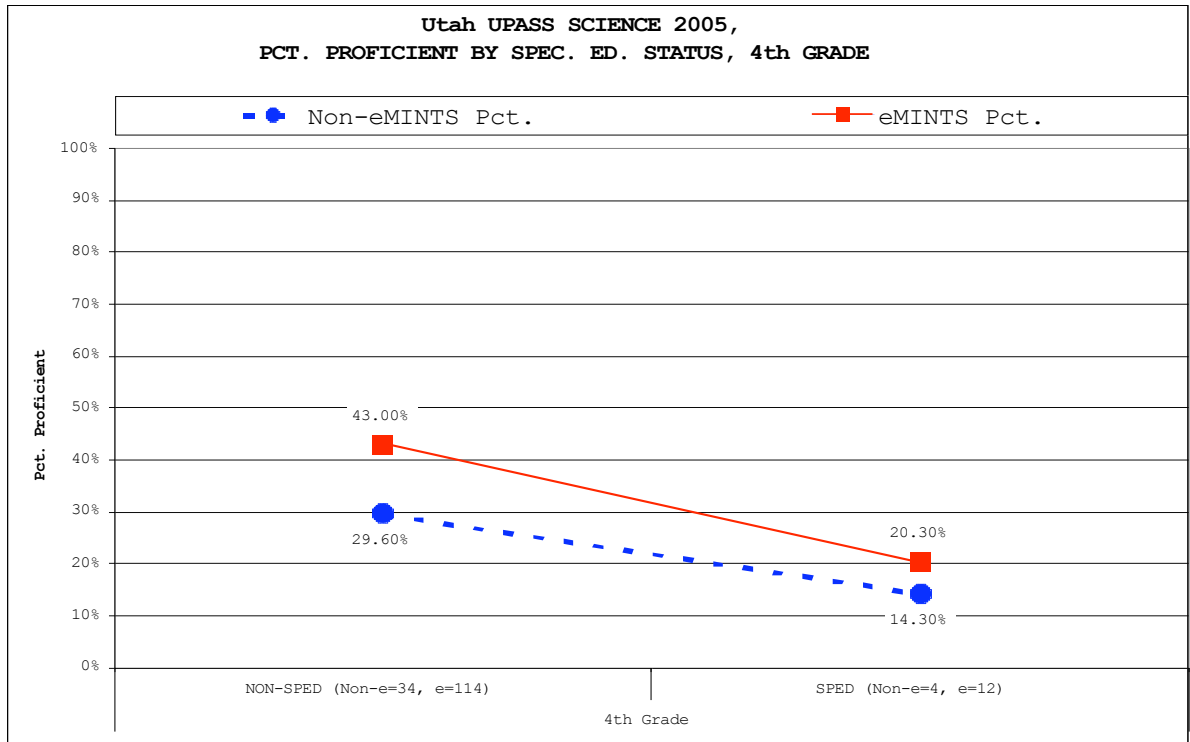


Figure 49
UPASS 2005 5th Grade Science percent proficient by eMINTs participation and Special Education Status

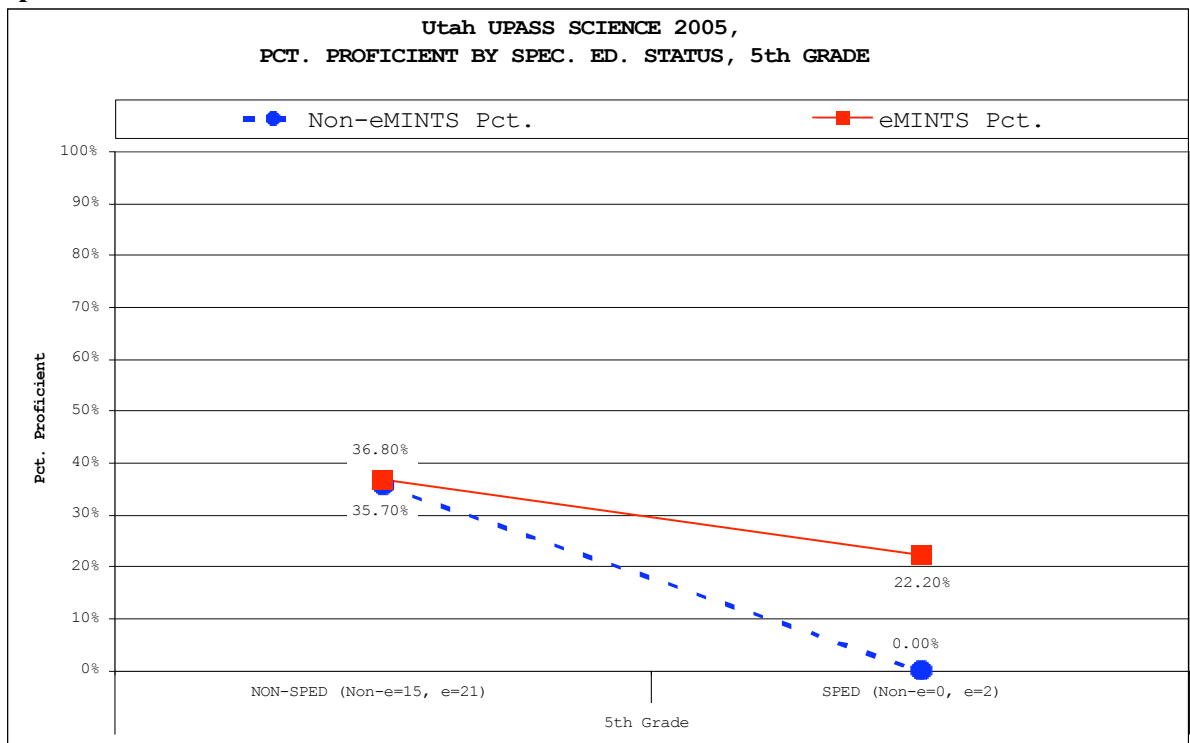


Figure 50
UPASS 2005 6th Grade Science percent proficient by eMINTs participation and Special Education Status

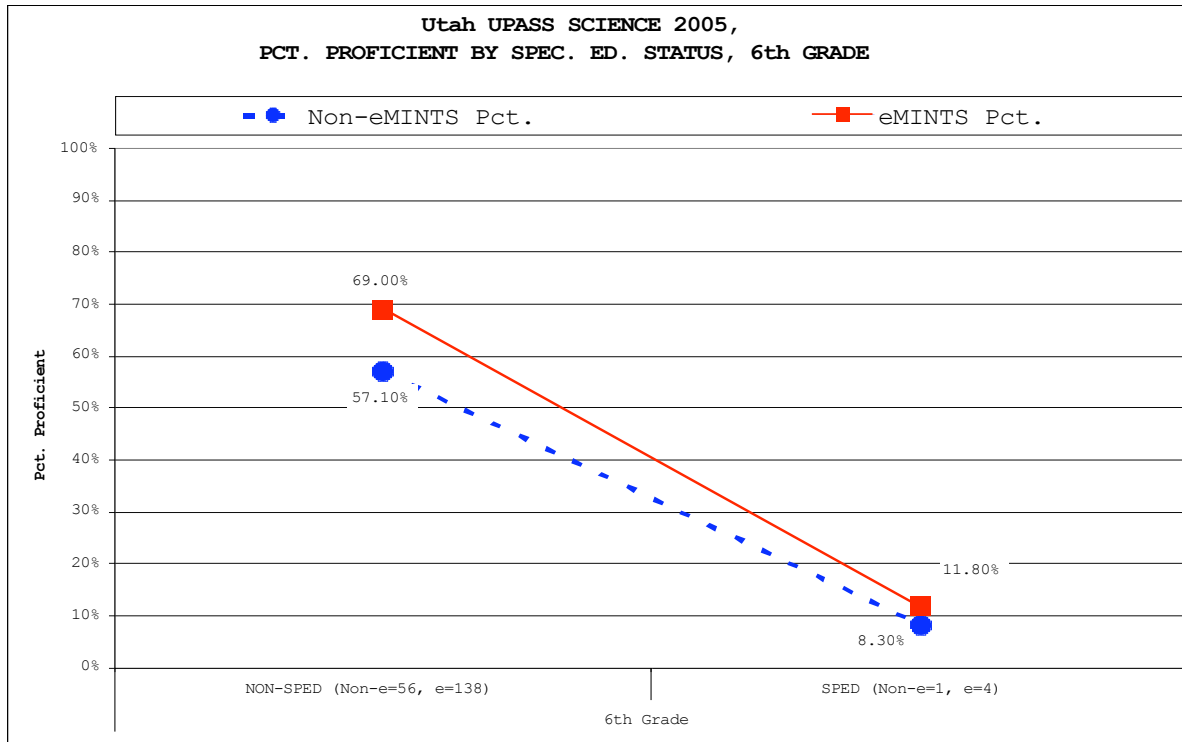
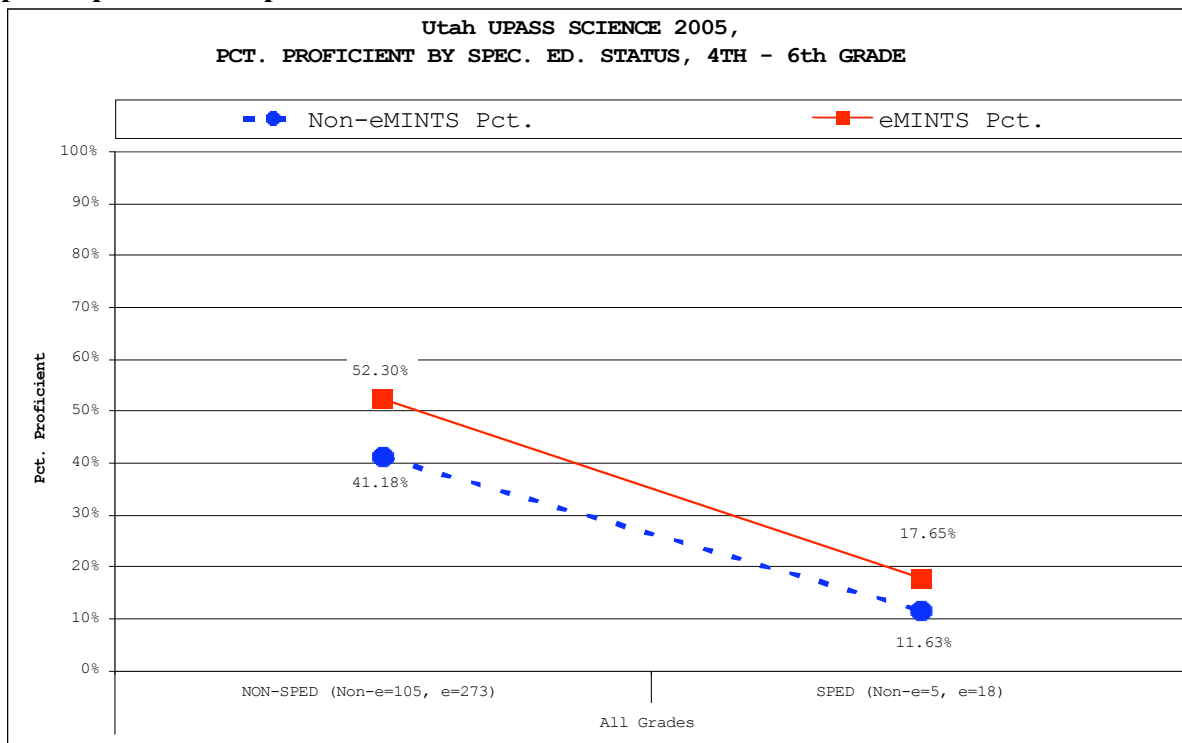


Figure 51
UPASS 2005 4th through 6th Grade Science percent proficient by eMINTs participation and Special Education Status



Methodology of Scale Score Analyses

To provide the most policy-relevant information, the analytical emphasis of this report is focused on issues of student proficiency. However, non-parametric methods, such as Chi-square analysis, limit the ability to simultaneously consider the effects of more than one variable. Thus, to better understand the relationship between individual demographic variables and eMINTS status, a General Linear Model analyses were performed for each demographic group (i.e., Caucasian/Ethnic Minority; LEP/non-LEP, etc.).

General Linear Model (2-Way ANOVA) Analyses

By using 2-way ANOVA, the variance of a continuous variable, such as the UPASS scale scores, can be simultaneously partitioned for multiple complete groups, such as Caucasian *and* Ethnic Minority along with eMINTs *and* non-eMINTs. This allows us to examine not only the main effects of Race Group and eMINTs Participation, for example; but, also allows for statistical testing of the interaction between these main effects.

Three principal assumptions must be met before it becomes appropriate to perform ANOVA analyses:

- (Assumption 1) Observations among/between levels of the independent variable(s) must be independent. In other words, an observation cannot exist in more than one group, Caucasian and Ethnic Minority, for example.
- (Assumption 2) The variance of the dependent variable (UPASS scale score in all cases for this report) cannot be radically different among levels of the independent variable(s). In other words, the differences between variance 1, variance 2, variance 3 and variance 4 in Table 16 cannot be different to a statistically significant degree. Levene's test for homogeneity of variances was used to measure this assumption.
- (Assumption 3) The cell sizes between levels of the main effects cannot be radically different. The rule-of-thumb test for this is that: (a) The largest cell cannot be more than 10 times as large as the smallest cell, and every cell must have an N of 10 or more.

Table 20
Example of main effects and cell relationships

| | | Main effect B, eMINTs | |
|-------------------------|---------|-----------------------|-------------------|
| | | eMINTs | Non-eMINTs |
| Main effect A, (LEP) | LEP | Variance 1 N 1 | Variance 2 N 2 |
| | Non-LEP | Variance 3 N 3 | Variance 4 N 4 |

Table 21 lists the findings testing these assumptions for potential ANOVA analyses with the data used for this report.

Table 21

Assumptions tests for potential ANOVA procedures

| Group | Assum. (1) | Assum. (2) | Assum. (3) | ANOVA Appropriate |
|---------------------------|---------------|---------------|---------------|----------------------|
| Lang. by Race Group | Met | Met | Met | Yes |
| Lang. by F/R Lunch Group | Met | Met | Met | Yes |
| Lang. by LEP | Met | Met | Met | Yes |
| Lang. by Spec. Ed. | Met | Met | Met | Yes |
| Math. by Race Group | Met | Met | Met | Yes |
| Math. by F/R Lunch Group | Met | Met | Met | Yes |
| Math. by LEP | Met | Met | Met | Yes |
| Math. by Spec. Ed. | Met | Met | Met | Yes |
| Sci. by Race Group | Met | Met | Met | Yes |
| Sci. by F/R Lunch Group * | Met | Not Met | Met | No |
| Sci. by LEP * | Met | Met | Not Met | No |
| Sci. by Spec. Ed. | Met | Met | Met | Yes |

* ANOVA is not appropriate for the indicated reason.

Findings of General Linear Model (2-Way ANOVA) Analyses

The results of this analysis address the key policy question that asks if significantly statistical differences in achievement occur due to the combination of eMINTS status and demographic status. The results of these analyses indicate that statistically significant interactions effects were measured for:

- Special education status and eMINTS status in Language Arts
- Race Group status and eMINTS in Mathematics

Descriptive Statistics by Demographic Group

The following tables and discussion are the results of all ANOVA tests performed. Tables 22 through 33 are the descriptive statistics for the dependent variable, UPASS scale score, for each academic subject and demographic variable.

Table 22

UPASS 2005 Language Arts scale score, descriptive statistics by Race Group

| eMINTS | Grade | Race Group | N | Mean | SD | Variance |
|--------------|-----------|-----------------|------|--------|-------|----------|
| Non-eMINTS | 4th Grade | Caucasian | 62 | 162.50 | 10.64 | 113.27 |
| | | Ethnic Minority | 81 | 155.78 | 10.74 | 115.43 |
| | | Total | 143 | 158.69 | 11.17 | 124.86 |
| | 5th Grade | Caucasian | 53 | 161.53 | 8.47 | 71.79 |
| | | Ethnic Minority | 101 | 160.14 | 10.16 | 103.24 |
| | | Total | 154 | 160.62 | 9.61 | 92.32 |
| | 6th Grade | Caucasian | 77 | 166.51 | 11.29 | 127.54 |
| | | Ethnic Minority | 33 | 156.39 | 10.33 | 106.62 |
| | | Total | 110 | 163.47 | 11.91 | 141.90 |
| | All Grade | Caucasian | 192 | 163.84 | 10.56 | 111.40 |
| | | Ethnic Minority | 215 | 157.92 | 10.57 | 111.76 |
| | | Total | 407 | 160.71 | 10.96 | 120.06 |
| eMINTS | 4th Grade | Caucasian | 164 | 163.19 | 10.51 | 110.47 |
| | | Ethnic Minority | 160 | 156.64 | 10.90 | 118.70 |
| | | Total | 324 | 159.95 | 11.18 | 124.94 |
| | 5th Grade | Caucasian | 72 | 160.93 | 8.48 | 71.98 |
| | | Ethnic Minority | 24 | 154.75 | 11.01 | 121.15 |
| | | Total | 96 | 159.39 | 9.51 | 90.37 |
| | 6th Grade | Caucasian | 200 | 165.88 | 9.94 | 98.76 |
| | | Ethnic Minority | 34 | 157.24 | 9.63 | 92.73 |
| | | Total | 234 | 164.62 | 10.34 | 106.80 |
| | All Grade | Caucasian | 436 | 164.05 | 10.09 | 101.75 |
| | | Ethnic Minority | 218 | 156.52 | 10.69 | 114.35 |
| | | Total | 654 | 161.54 | 10.88 | 118.40 |
| All Students | 4th Grade | Caucasian | 226 | 163.00 | 10.53 | 110.84 |
| | | Ethnic Minority | 241 | 156.35 | 10.83 | 117.28 |
| | | Total | 467 | 159.57 | 11.18 | 124.99 |
| | 5th Grade | Caucasian | 125 | 161.18 | 8.45 | 71.41 |
| | | Ethnic Minority | 125 | 159.10 | 10.50 | 110.27 |
| | | Total | 250 | 160.14 | 9.57 | 91.56 |
| | 6th Grade | Caucasian | 277 | 166.05 | 10.32 | 106.41 |
| | | Ethnic Minority | 67 | 156.82 | 9.91 | 98.24 |
| | | Total | 344 | 164.26 | 10.86 | 117.93 |
| | All Grade | Caucasian | 628 | 163.99 | 10.23 | 104.54 |
| | | Ethnic Minority | 433 | 157.22 | 10.64 | 113.29 |
| | | Total | 1061 | 161.22 | 10.91 | 119.09 |

Table 23**UPASS 2005 Language Arts scale score, descriptive statistics by F/R Lunch Status**

| eMINTS | Grade | F/R Lunch Status | N | Mean | SD | Variance |
|--------------|-----------|------------------|------|--------|-------|----------|
| Non-eMINTS | 4th Grade | Non F/R | 37 | 161.11 | 10.19 | 103.82 |
| | | F/R | 106 | 157.85 | 11.42 | 130.49 |
| | | Total | 143 | 158.69 | 11.17 | 124.86 |
| | 5th Grade | Non F/R | 31 | 162.32 | 8.41 | 70.76 |
| | | F/R | 122 | 160.20 | 9.91 | 98.21 |
| | | Total | 154 | 160.62 | 9.61 | 92.32 |
| | 6th Grade | Non F/R | 41 | 167.41 | 11.74 | 137.75 |
| | | F/R | 69 | 161.13 | 11.47 | 131.50 |
| | | Total | 110 | 163.47 | 11.91 | 141.90 |
| | All Grade | Non F/R | 109 | 163.83 | 10.65 | 113.35 |
| | | F/R | 297 | 159.58 | 10.88 | 118.44 |
| | | Total | 407 | 160.71 | 10.96 | 120.06 |
| eMINTS | 4th Grade | Non F/R | 93 | 164.91 | 10.31 | 106.21 |
| | | F/R | 231 | 157.96 | 10.91 | 119.02 |
| | | Total | 324 | 159.95 | 11.18 | 124.94 |
| | 5th Grade | Non F/R | 31 | 161.39 | 8.88 | 78.91 |
| | | F/R | 65 | 158.43 | 9.71 | 94.28 |
| | | Total | 96 | 159.39 | 9.51 | 90.37 |
| | 6th Grade | Non F/R | 104 | 167.34 | 9.20 | 84.61 |
| | | F/R | 130 | 162.45 | 10.71 | 114.67 |
| | | Total | 234 | 164.62 | 10.34 | 106.80 |
| | All Grade | Non F/R | 228 | 165.54 | 9.79 | 95.86 |
| | | F/R | 426 | 159.40 | 10.84 | 117.54 |
| | | Total | 654 | 161.54 | 10.88 | 118.40 |
| All Students | 4th Grade | Non F/R | 130 | 163.83 | 10.38 | 107.69 |
| | | F/R | 337 | 157.92 | 11.06 | 122.26 |
| | | Total | 467 | 159.57 | 11.18 | 124.99 |
| | 5th Grade | Non F/R | 62 | 161.85 | 8.59 | 73.83 |
| | | F/R | 187 | 159.59 | 9.85 | 97.05 |
| | | Total | 250 | 160.14 | 9.57 | 91.56 |
| | 6th Grade | Non F/R | 145 | 167.36 | 9.94 | 98.79 |
| | | F/R | 199 | 161.99 | 10.97 | 120.27 |
| | | Total | 344 | 164.26 | 10.86 | 117.93 |
| | All Grade | Non F/R | 337 | 164.99 | 10.09 | 101.84 |
| | | F/R | 723 | 159.47 | 10.85 | 117.76 |
| | | Total | 1061 | 161.22 | 10.91 | 119.09 |

Table 24**UPASS 2005 Language Arts scale score, descriptive statistics by LEP Status**

| eMINTS | Grade | LEP Status | N | Mean | SD | Variance |
|--------------|-----------|------------|------|--------|-------|----------|
| Non-eMINTS | 4th Grade | Non LEP | 77 | 161.26 | 10.99 | 120.72 |
| | | LEP | 66 | 155.70 | 10.71 | 114.71 |
| | | Total | 143 | 158.69 | 11.17 | 124.86 |
| | 5th Grade | Non LEP | 79 | 161.05 | 9.23 | 85.15 |
| | | LEP | 75 | 160.16 | 10.04 | 100.70 |
| | | Total | 154 | 160.62 | 9.61 | 92.32 |
| | 6th Grade | Non LEP | 93 | 164.94 | 11.81 | 139.45 |
| | | LEP | 17 | 155.47 | 9.19 | 84.39 |
| | | Total | 110 | 163.47 | 11.91 | 141.90 |
| | All Grade | Non LEP | 249 | 162.57 | 10.90 | 118.88 |
| | | LEP | 158 | 157.79 | 10.42 | 108.66 |
| | | Total | 407 | 160.71 | 10.96 | 120.06 |
| eMINTS | 4th Grade | Non LEP | 208 | 162.32 | 10.50 | 110.20 |
| | | LEP | 116 | 155.72 | 11.15 | 124.34 |
| | | Total | 324 | 159.95 | 11.18 | 124.94 |
| | 5th Grade | Non LEP | 75 | 160.71 | 8.36 | 69.81 |
| | | LEP | 21 | 154.67 | 11.88 | 141.03 |
| | | Total | 96 | 159.39 | 9.51 | 90.37 |
| | 6th Grade | Non LEP | 221 | 165.02 | 10.20 | 104.07 |
| | | LEP | 13 | 157.92 | 10.69 | 114.24 |
| | | Total | 234 | 164.62 | 10.34 | 106.80 |
| | All Grade | Non LEP | 504 | 163.26 | 10.19 | 103.84 |
| | | LEP | 150 | 155.76 | 11.17 | 124.68 |
| | | Total | 654 | 161.54 | 10.88 | 118.40 |
| All Students | 4th Grade | Non LEP | 285 | 162.03 | 10.62 | 112.85 |
| | | LEP | 182 | 155.71 | 10.96 | 120.20 |
| | | Total | 467 | 159.57 | 11.18 | 124.99 |
| | 5th Grade | Non LEP | 154 | 160.88 | 8.79 | 77.20 |
| | | LEP | 96 | 158.96 | 10.65 | 113.35 |
| | | Total | 250 | 160.14 | 9.57 | 91.56 |
| | 6th Grade | Non LEP | 314 | 164.99 | 10.68 | 114.14 |
| | | LEP | 30 | 156.53 | 9.77 | 95.36 |
| | | Total | 344 | 164.26 | 10.86 | 117.93 |
| | All Grade | Non LEP | 753 | 163.03 | 10.43 | 108.77 |
| | | LEP | 308 | 156.80 | 10.82 | 117.12 |
| | | Total | 1061 | 161.22 | 10.91 | 119.09 |

Table 25**UPASS 2005 Language Arts scale score, descriptive statistics by Special Ed. Status**

| eMINTS | Grade | Spec. Ed. Status | N | Mean | SD | Variance |
|--------------|-----------|------------------|------|--------|-------|----------|
| Non-eMINTS | 4th Grade | Non Sped | 116 | 160.71 | 10.34 | 106.96 |
| | | Sped | 27 | 150.04 | 10.63 | 112.96 |
| | | Total | 143 | 158.69 | 11.17 | 124.86 |
| | 5th Grade | Non Sped | 131 | 160.50 | 9.59 | 91.94 |
| | | Sped | 23 | 161.26 | 9.91 | 98.20 |
| | | Total | 154 | 160.62 | 9.61 | 92.32 |
| | 6th Grade | Non Sped | 98 | 164.93 | 11.46 | 131.37 |
| | | Sped | 12 | 151.58 | 8.64 | 74.63 |
| | | Total | 110 | 163.47 | 11.91 | 141.90 |
| | All Grade | Non Sped | 345 | 161.83 | 10.55 | 111.38 |
| | | Sped | 62 | 154.50 | 11.17 | 124.75 |
| | | Total | 407 | 160.71 | 10.96 | 120.06 |
| eMINTS | 4th Grade | Non Sped | 264 | 161.74 | 10.65 | 113.38 |
| | | Sped | 60 | 152.08 | 10.07 | 101.30 |
| | | Total | 324 | 159.95 | 11.18 | 124.94 |
| | 5th Grade | Non Sped | 81 | 160.77 | 8.50 | 72.21 |
| | | Sped | 15 | 151.93 | 11.41 | 130.07 |
| | | Total | 96 | 159.39 | 9.51 | 90.37 |
| | 6th Grade | Non Sped | 200 | 166.79 | 8.83 | 78.03 |
| | | Sped | 34 | 151.88 | 9.37 | 87.87 |
| | | Total | 234 | 164.62 | 10.34 | 106.80 |
| | All Grade | Non Sped | 545 | 163.45 | 10.03 | 100.56 |
| | | Sped | 109 | 152.00 | 9.95 | 99.06 |
| | | Total | 654 | 161.54 | 10.88 | 118.40 |
| All Students | 4th Grade | Non Sped | 380 | 161.43 | 10.55 | 111.36 |
| | | Sped | 87 | 151.45 | 10.23 | 104.55 |
| | | Total | 467 | 159.57 | 11.18 | 124.99 |
| | 5th Grade | Non Sped | 212 | 160.60 | 9.17 | 84.04 |
| | | Sped | 38 | 157.58 | 11.36 | 128.95 |
| | | Total | 250 | 160.14 | 9.57 | 91.56 |
| | 6th Grade | Non Sped | 298 | 166.18 | 9.80 | 95.95 |
| | | Sped | 46 | 151.80 | 9.09 | 82.69 |
| | | Total | 344 | 164.26 | 10.86 | 117.93 |
| | All Grade | Non Sped | 890 | 162.82 | 10.26 | 105.26 |
| | | Sped | 171 | 152.91 | 10.45 | 109.14 |
| | | Total | 1061 | 161.22 | 10.91 | 119.09 |

Table 26**UPASS 2005 Mathematics scale score, descriptive statistics by Race Group**

| eMINTS | Grade | Race Group | N | Mean | SD | Variance |
|--------------|-----------|-----------------|------|--------|-------|----------|
| Non-eMINTS | 4th Grade | Caucasian | 62 | 159.90 | 12.19 | 148.48 |
| | | Ethnic Minority | 79 | 154.42 | 11.92 | 142.12 |
| | | Total | 141 | 156.83 | 12.30 | 151.34 |
| | 5th Grade | Caucasian | 53 | 163.38 | 9.76 | 95.24 |
| | | Ethnic Minority | 101 | 157.81 | 9.07 | 82.27 |
| | | Total | 154 | 159.73 | 9.65 | 93.18 |
| | 6th Grade | Caucasian | 78 | 163.54 | 10.79 | 116.51 |
| | | Ethnic Minority | 33 | 155.21 | 9.62 | 92.49 |
| | | Total | 111 | 161.06 | 11.09 | 123.08 |
| | All Grade | Caucasian | 193 | 162.33 | 11.07 | 122.49 |
| | | Ethnic Minority | 213 | 156.15 | 10.37 | 107.63 |
| | | Total | 406 | 159.09 | 11.13 | 123.95 |
| eMINTS | 4th Grade | Caucasian | 163 | 161.71 | 10.98 | 120.49 |
| | | Ethnic Minority | 160 | 160.19 | 10.50 | 110.30 |
| | | Total | 323 | 160.96 | 10.76 | 115.66 |
| | 5th Grade | Caucasian | 72 | 160.69 | 10.96 | 120.07 |
| | | Ethnic Minority | 24 | 159.79 | 10.92 | 119.30 |
| | | Total | 96 | 160.47 | 10.90 | 118.78 |
| | 6th Grade | Caucasian | 200 | 163.25 | 9.11 | 82.95 |
| | | Ethnic Minority | 34 | 155.21 | 9.41 | 88.59 |
| | | Total | 234 | 162.08 | 9.56 | 91.47 |
| | All Grade | Caucasian | 435 | 162.25 | 10.18 | 103.63 |
| | | Ethnic Minority | 218 | 159.37 | 10.50 | 110.17 |
| | | Total | 653 | 161.29 | 10.37 | 107.49 |
| All Students | 4th Grade | Caucasian | 225 | 161.21 | 11.32 | 128.23 |
| | | Ethnic Minority | 239 | 158.28 | 11.30 | 127.68 |
| | | Total | 464 | 159.70 | 11.39 | 129.82 |
| | 5th Grade | Caucasian | 125 | 161.83 | 10.51 | 110.46 |
| | | Ethnic Minority | 125 | 158.19 | 9.44 | 89.09 |
| | | Total | 250 | 160.01 | 10.13 | 102.70 |
| | 6th Grade | Caucasian | 278 | 163.33 | 9.59 | 92.00 |
| | | Ethnic Minority | 67 | 155.21 | 9.44 | 89.14 |
| | | Total | 345 | 161.75 | 10.08 | 101.54 |
| | All Grade | Caucasian | 628 | 162.27 | 10.45 | 109.24 |
| | | Ethnic Minority | 431 | 157.78 | 10.55 | 111.26 |
| | | Total | 1059 | 160.44 | 10.72 | 114.84 |

Table 27**UPASS 2005 Mathematics scale score, descriptive statistics by F/R Lunch Status**

| eMINTS | Grade | F/R Lunch Status | N | Mean | SD | Variance |
|--------------|-----------|------------------|------|--------|-------|----------|
| Non-eMINTS | 4th Grade | Non F/R | 37 | 161.68 | 11.39 | 129.73 |
| | | F/R | 104 | 155.11 | 12.20 | 148.93 |
| | | Total | 141 | 156.83 | 12.30 | 151.34 |
| | 5th Grade | Non F/R | 31 | 162.74 | 8.49 | 72.00 |
| | | F/R | 123 | 158.97 | 9.81 | 96.26 |
| | | Total | 154 | 159.73 | 9.65 | 93.18 |
| | 6th Grade | Non F/R | 42 | 164.40 | 11.40 | 130.00 |
| | | F/R | 69 | 159.03 | 10.47 | 109.62 |
| | | Total | 111 | 161.06 | 11.09 | 123.08 |
| | All Grade | Non F/R | 110 | 163.02 | 10.63 | 112.94 |
| | | F/R | 296 | 157.63 | 10.98 | 120.53 |
| | | Total | 406 | 159.09 | 11.13 | 123.95 |
| eMINTS | 4th Grade | Non F/R | 93 | 163.13 | 11.32 | 128.24 |
| | | F/R | 230 | 160.08 | 10.41 | 108.43 |
| | | Total | 323 | 160.96 | 10.76 | 115.66 |
| | 5th Grade | Non F/R | 32 | 161.31 | 11.30 | 127.58 |
| | | F/R | 64 | 160.05 | 10.76 | 115.79 |
| | | Total | 96 | 160.47 | 10.90 | 118.78 |
| | 6th Grade | Non F/R | 104 | 164.82 | 8.13 | 66.11 |
| | | F/R | 130 | 159.89 | 10.08 | 101.55 |
| | | Total | 234 | 162.08 | 9.56 | 91.47 |
| | All Grade | Non F/R | 229 | 163.64 | 10.02 | 100.46 |
| | | F/R | 424 | 160.02 | 10.34 | 106.92 |
| | | Total | 653 | 161.29 | 10.37 | 107.49 |
| All Students | 4th Grade | Non F/R | 130 | 162.72 | 11.32 | 128.10 |
| | | F/R | 334 | 158.53 | 11.22 | 125.96 |
| | | Total | 464 | 159.70 | 11.39 | 129.82 |
| | 5th Grade | Non F/R | 63 | 162.02 | 9.96 | 99.15 |
| | | F/R | 187 | 159.34 | 10.13 | 102.62 |
| | | Total | 250 | 160.01 | 10.13 | 102.70 |
| | 6th Grade | Non F/R | 146 | 164.70 | 9.15 | 83.76 |
| | | F/R | 199 | 159.59 | 10.20 | 103.98 |
| | | Total | 345 | 161.75 | 10.08 | 101.54 |
| | All Grade | Non F/R | 339 | 163.44 | 10.21 | 104.27 |
| | | F/R | 720 | 159.03 | 10.67 | 113.74 |
| | | Total | 1059 | 160.44 | 10.72 | 114.84 |

Table 28**UPASS 2005 Mathematics scale score, descriptive statistics by LEP Status**

| eMINTS | Grade | LEP Status | N | Mean | SD | Variance |
|--------------|-----------|------------|------|--------|-------|----------|
| Non-eMINTS | 4th Grade | Non LEP | 77 | 158.48 | 13.55 | 183.70 |
| | | LEP | 64 | 154.84 | 10.36 | 107.37 |
| | | Total | 141 | 156.83 | 12.30 | 151.34 |
| | 5th Grade | Non LEP | 79 | 162.27 | 9.51 | 90.43 |
| | | LEP | 75 | 157.05 | 9.12 | 83.21 |
| | | Total | 154 | 159.73 | 9.65 | 93.18 |
| | 6th Grade | Non LEP | 94 | 162.17 | 10.94 | 119.69 |
| | | LEP | 17 | 154.94 | 10.17 | 103.43 |
| | | Total | 111 | 161.06 | 11.09 | 123.08 |
| | All Grade | Non LEP | 250 | 161.06 | 11.49 | 132.08 |
| | | LEP | 156 | 155.92 | 9.76 | 95.25 |
| | | Total | 406 | 159.09 | 11.13 | 123.95 |
| eMINTS | 4th Grade | Non LEP | 208 | 161.57 | 10.79 | 116.49 |
| | | LEP | 115 | 159.86 | 10.64 | 113.28 |
| | | Total | 323 | 160.96 | 10.76 | 115.66 |
| | 5th Grade | Non LEP | 75 | 160.65 | 10.86 | 117.96 |
| | | LEP | 21 | 159.81 | 11.28 | 127.16 |
| | | Total | 96 | 160.47 | 10.90 | 118.78 |
| | 6th Grade | Non LEP | 221 | 162.52 | 9.38 | 88.01 |
| | | LEP | 13 | 154.69 | 10.00 | 99.90 |
| | | Total | 234 | 162.08 | 9.56 | 91.47 |
| | All Grade | Non LEP | 504 | 161.85 | 10.21 | 104.23 |
| | | LEP | 149 | 159.40 | 10.71 | 114.68 |
| | | Total | 653 | 161.29 | 10.37 | 107.49 |
| All Students | 4th Grade | Non LEP | 285 | 160.73 | 11.66 | 135.95 |
| | | LEP | 179 | 158.07 | 10.79 | 116.37 |
| | | Total | 464 | 159.70 | 11.39 | 129.82 |
| | 5th Grade | Non LEP | 154 | 161.48 | 10.19 | 103.81 |
| | | LEP | 96 | 157.66 | 9.64 | 92.90 |
| | | Total | 250 | 160.01 | 10.13 | 102.70 |
| | 6th Grade | Non LEP | 315 | 162.41 | 9.86 | 97.14 |
| | | LEP | 30 | 154.83 | 9.92 | 98.42 |
| | | Total | 345 | 161.75 | 10.08 | 101.54 |
| | All Grade | Non LEP | 754 | 161.59 | 10.65 | 113.44 |
| | | LEP | 305 | 157.62 | 10.37 | 107.44 |
| | | Total | 1059 | 160.44 | 10.72 | 114.84 |

Table 29**UPASS 2005 Mathematics scale score, descriptive statistics by Special Ed. Status**

| eMINTS | Grade | Spec. Ed. Status | N | Mean | SD | Variance |
|--------------|-----------|------------------|------|--------|-------|----------|
| Non-eMINTS | 4th Grade | Non Sped | 113 | 159.42 | 10.59 | 112.21 |
| | | Sped | 28 | 146.39 | 13.35 | 178.32 |
| | | Total | 141 | 156.83 | 12.30 | 151.34 |
| | 5th Grade | Non Sped | 131 | 160.79 | 9.63 | 92.77 |
| | | Sped | 23 | 153.65 | 7.38 | 54.51 |
| | | Total | 154 | 159.73 | 9.65 | 93.18 |
| | 6th Grade | Non Sped | 99 | 162.05 | 10.93 | 119.42 |
| | | Sped | 12 | 152.92 | 9.26 | 85.72 |
| | | Total | 111 | 161.06 | 11.09 | 123.08 |
| | All Grade | Non Sped | 343 | 160.70 | 10.36 | 107.30 |
| | | Sped | 63 | 150.29 | 11.16 | 124.59 |
| | | Total | 406 | 159.09 | 11.13 | 123.95 |
| eMINTS | 4th Grade | Non Sped | 264 | 162.07 | 10.80 | 116.59 |
| | | Sped | 59 | 156.00 | 9.10 | 82.83 |
| | | Total | 323 | 160.96 | 10.76 | 115.66 |
| | 5th Grade | Non Sped | 81 | 162.43 | 9.92 | 98.32 |
| | | Sped | 15 | 149.87 | 10.07 | 101.41 |
| | | Total | 96 | 160.47 | 10.90 | 118.78 |
| | 6th Grade | Non Sped | 200 | 164.13 | 7.78 | 60.45 |
| | | Sped | 34 | 150.03 | 10.31 | 106.21 |
| | | Total | 234 | 162.08 | 9.56 | 91.47 |
| | All Grade | Non Sped | 545 | 162.88 | 9.69 | 93.86 |
| | | Sped | 108 | 153.27 | 10.00 | 99.99 |
| | | Total | 653 | 161.29 | 10.37 | 107.49 |
| All Students | 4th Grade | Non Sped | 377 | 161.27 | 10.79 | 116.45 |
| | | Sped | 87 | 152.91 | 11.50 | 132.22 |
| | | Total | 464 | 159.70 | 11.39 | 129.82 |
| | 5th Grade | Non Sped | 212 | 161.42 | 9.75 | 95.07 |
| | | Sped | 38 | 152.16 | 8.62 | 74.30 |
| | | Total | 250 | 160.01 | 10.13 | 102.70 |
| | 6th Grade | Non Sped | 299 | 163.44 | 8.98 | 80.60 |
| | | Sped | 46 | 150.78 | 10.02 | 100.49 |
| | | Total | 345 | 161.75 | 10.08 | 101.54 |
| | All Grade | Non Sped | 888 | 162.04 | 10.00 | 100.06 |
| | | Sped | 171 | 152.17 | 10.51 | 110.46 |
| | | Total | 1059 | 160.44 | 10.72 | 114.84 |

Table 30**UPASS 2005 Science scale score, descriptive statistics by Race Group**

| eMINTS | Grade | Race Group | N | Mean | SD | Variance |
|--------------|-----------|-----------------|-----|--------|-------|----------|
| Non-eMINTS | 4th Grade | Caucasian | 62 | 154.52 | 9.90 | 97.99 |
| | | Ethnic Minority | 81 | 149.47 | 9.78 | 95.68 |
| | | Total | 143 | 151.66 | 10.11 | 102.30 |
| | 5th Grade | Caucasian | 35 | 159.14 | 8.17 | 66.77 |
| | | Ethnic Minority | 10 | 144.40 | 11.39 | 129.82 |
| | | Total | 45 | 155.87 | 10.80 | 116.57 |
| | 6th Grade | Caucasian | 77 | 162.78 | 12.51 | 156.57 |
| | | Ethnic Minority | 33 | 152.82 | 9.45 | 89.22 |
| | | Total | 110 | 159.79 | 12.51 | 156.39 |
| | All Grade | Caucasian | 174 | 159.10 | 11.40 | 130.01 |
| | | Ethnic Minority | 124 | 149.95 | 9.99 | 99.80 |
| | | Total | 298 | 155.30 | 11.73 | 137.48 |
| eMINTS | 4th Grade | Caucasian | 164 | 158.51 | 10.34 | 106.90 |
| | | Ethnic Minority | 160 | 153.65 | 10.55 | 111.37 |
| | | Total | 324 | 156.11 | 10.71 | 114.69 |
| | 5th Grade | Caucasian | 59 | 156.46 | 9.53 | 90.74 |
| | | Ethnic Minority | 7 | 150.57 | 4.28 | 18.29 |
| | | Total | 66 | 155.83 | 9.27 | 85.99 |
| | 6th Grade | Caucasian | 200 | 162.23 | 9.47 | 89.68 |
| | | Ethnic Minority | 34 | 152.24 | 8.13 | 66.13 |
| | | Total | 234 | 160.77 | 9.92 | 98.41 |
| | All Grade | Caucasian | 423 | 159.98 | 10.05 | 101.02 |
| | | Ethnic Minority | 201 | 153.30 | 10.03 | 100.55 |
| | | Total | 624 | 157.83 | 10.51 | 110.45 |
| All Students | 4th Grade | Caucasian | 226 | 157.41 | 10.35 | 107.19 |
| | | Ethnic Minority | 241 | 152.24 | 10.47 | 109.59 |
| | | Total | 467 | 154.75 | 10.72 | 114.88 |
| | 5th Grade | Caucasian | 94 | 157.46 | 9.09 | 82.70 |
| | | Ethnic Minority | 17 | 146.94 | 9.47 | 89.68 |
| | | Total | 111 | 155.85 | 9.87 | 97.44 |
| | 6th Grade | Caucasian | 277 | 162.38 | 10.38 | 107.84 |
| | | Ethnic Minority | 67 | 152.52 | 8.74 | 76.41 |
| | | Total | 344 | 160.46 | 10.81 | 116.76 |
| | All Grade | Caucasian | 597 | 159.72 | 10.46 | 109.43 |
| | | Ethnic Minority | 325 | 152.02 | 10.13 | 102.62 |
| | | Total | 922 | 157.01 | 10.98 | 120.46 |

Table 31**UPASS 2005 Science scale score, descriptive statistics by F/R Lunch Status**

| eMINTS | Grade | F/R Lunch Status | N | Mean | SD | Variance |
|--------------|-----------|------------------|-----|--------|-------|----------|
| Non-eMINTS | 4th Grade | Non F/R | 37 | 154.81 | 9.32 | 86.82 |
| | | F/R | 106 | 150.56 | 10.19 | 103.85 |
| | | Total | 143 | 151.66 | 10.11 | 102.30 |
| | 5th Grade | Non F/R | 24 | 158.00 | 9.44 | 89.13 |
| | | F/R | 21 | 153.43 | 11.93 | 142.26 |
| | | Total | 45 | 155.87 | 10.80 | 116.57 |
| | 6th Grade | Non F/R | 41 | 162.95 | 11.91 | 141.85 |
| | | F/R | 69 | 157.91 | 12.56 | 157.64 |
| | | Total | 110 | 159.79 | 12.51 | 156.39 |
| | All Grade | Non F/R | 102 | 158.83 | 10.97 | 120.40 |
| | | F/R | 196 | 153.45 | 11.71 | 137.08 |
| | | Total | 298 | 155.30 | 11.73 | 137.48 |
| eMINTS | 4th Grade | Non F/R | 93 | 159.78 | 10.35 | 107.11 |
| | | F/R | 231 | 154.63 | 10.51 | 110.55 |
| | | Total | 324 | 156.11 | 10.71 | 114.69 |
| | 5th Grade | Non F/R | 27 | 158.78 | 7.86 | 61.80 |
| | | F/R | 39 | 153.79 | 9.72 | 94.38 |
| | | Total | 66 | 155.83 | 9.27 | 85.99 |
| | 6th Grade | Non F/R | 104 | 163.91 | 9.27 | 85.98 |
| | | F/R | 130 | 158.26 | 9.74 | 94.78 |
| | | Total | 234 | 160.77 | 9.92 | 98.41 |
| | All Grade | Non F/R | 224 | 161.58 | 9.80 | 95.94 |
| | | F/R | 400 | 155.73 | 10.32 | 106.52 |
| | | Total | 624 | 157.83 | 10.51 | 110.45 |
| All Students | 4th Grade | Non F/R | 130 | 158.37 | 10.28 | 105.69 |
| | | F/R | 337 | 153.35 | 10.57 | 111.71 |
| | | Total | 467 | 154.75 | 10.72 | 114.88 |
| | 5th Grade | Non F/R | 51 | 158.41 | 8.56 | 73.29 |
| | | F/R | 60 | 153.67 | 10.44 | 109.04 |
| | | Total | 111 | 155.85 | 9.87 | 97.44 |
| | 6th Grade | Non F/R | 145 | 163.64 | 10.05 | 101.09 |
| | | F/R | 199 | 158.14 | 10.77 | 115.92 |
| | | Total | 344 | 160.46 | 10.81 | 116.76 |
| | All Grade | Non F/R | 326 | 160.72 | 10.24 | 104.87 |
| | | F/R | 596 | 154.98 | 10.84 | 117.50 |
| | | Total | 922 | 157.01 | 10.98 | 120.46 |

Table 32**UPASS 2005 Science scale score, descriptive statistics by LEP Status**

| eMINTS | Grade | LEP Status | N | Mean | SD | Variance |
|--------------|-----------|------------|-----|--------|-------|----------|
| Non-eMINTS | 4th Grade | Non LEP | 77 | 153.61 | 10.09 | 101.82 |
| | | LEP | 66 | 149.38 | 9.73 | 94.64 |
| | | Total | 143 | 151.66 | 10.11 | 102.30 |
| | 5th Grade | Non LEP | 37 | 158.95 | 8.06 | 64.89 |
| | | LEP | 8 | 141.63 | 10.82 | 117.13 |
| | | Total | 45 | 155.87 | 10.80 | 116.57 |
| | 6th Grade | Non LEP | 93 | 161.32 | 12.45 | 155.00 |
| | | LEP | 17 | 151.41 | 9.27 | 85.88 |
| | | Total | 110 | 159.79 | 12.51 | 156.39 |
| | All Grade | Non LEP | 207 | 158.03 | 11.42 | 130.48 |
| | | LEP | 91 | 149.08 | 9.94 | 98.76 |
| | | Total | 298 | 155.30 | 11.73 | 137.48 |
| eMINTS | 4th Grade | Non LEP | 207 | 158.21 | 10.17 | 103.42 |
| | | LEP | 117 | 152.39 | 10.67 | 113.90 |
| | | Total | 324 | 156.11 | 10.71 | 114.69 |
| | 5th Grade | Non LEP | 60 | 156.38 | 9.46 | 89.53 |
| | | LEP | 6 | 150.33 | 4.63 | 21.47 |
| | | Total | 66 | 155.83 | 9.27 | 85.99 |
| | 6th Grade | Non LEP | 221 | 161.10 | 9.97 | 99.47 |
| | | LEP | 13 | 155.15 | 7.14 | 50.97 |
| | | Total | 234 | 160.77 | 9.92 | 98.41 |
| | All Grade | Non LEP | 488 | 159.30 | 10.13 | 102.56 |
| | | LEP | 136 | 152.57 | 10.20 | 104.08 |
| | | Total | 624 | 157.83 | 10.51 | 110.45 |
| All Students | 4th Grade | Non LEP | 284 | 156.96 | 10.34 | 106.82 |
| | | LEP | 183 | 151.31 | 10.42 | 108.50 |
| | | Total | 467 | 154.75 | 10.72 | 114.88 |
| | 5th Grade | Non LEP | 97 | 157.36 | 9.00 | 80.92 |
| | | LEP | 14 | 145.36 | 9.56 | 91.32 |
| | | Total | 111 | 155.85 | 9.87 | 97.44 |
| | 6th Grade | Non LEP | 314 | 161.17 | 10.75 | 115.48 |
| | | LEP | 30 | 153.03 | 8.49 | 72.03 |
| | | Total | 344 | 160.46 | 10.81 | 116.76 |
| | All Grade | Non LEP | 695 | 158.92 | 10.54 | 111.03 |
| | | LEP | 227 | 151.17 | 10.22 | 104.44 |
| | | Total | 922 | 157.01 | 10.98 | 120.46 |

Table 33**UPASS 2005 Science scale score, descriptive statistics by Special Ed. Status**

| eMINTS | Grade | Spec. Ed. Status | N | Mean | SD | Variance |
|--------------|-----------|------------------|-----|--------|-------|----------|
| Non-eMINTS | 4th Grade | Non Sped | 115 | 153.28 | 9.32 | 86.94 |
| | | Sped | 28 | 145.00 | 10.67 | 113.78 |
| | | Total | 143 | 151.66 | 10.11 | 102.30 |
| | 5th Grade | Non Sped | 42 | 156.67 | 10.35 | 107.20 |
| | | Sped | 3 | 144.67 | 12.86 | 165.33 |
| | | Total | 45 | 155.87 | 10.80 | 116.57 |
| | 6th Grade | Non Sped | 98 | 161.35 | 11.86 | 140.62 |
| | | Sped | 12 | 147.08 | 10.58 | 111.90 |
| | | Total | 110 | 159.79 | 12.51 | 156.39 |
| | All Grade | Non Sped | 255 | 156.94 | 11.12 | 123.60 |
| | | Sped | 43 | 145.56 | 10.55 | 111.25 |
| | | Total | 298 | 155.30 | 11.73 | 137.48 |
| eMINTS | 4th Grade | Non Sped | 265 | 157.06 | 10.83 | 117.34 |
| | | Sped | 59 | 151.85 | 9.06 | 81.99 |
| | | Total | 324 | 156.11 | 10.71 | 114.69 |
| | 5th Grade | Non Sped | 57 | 156.42 | 8.77 | 76.93 |
| | | Sped | 9 | 152.11 | 11.92 | 142.11 |
| | | Total | 66 | 155.83 | 9.27 | 85.99 |
| | 6th Grade | Non Sped | 200 | 162.70 | 8.70 | 75.60 |
| | | Sped | 34 | 149.44 | 9.17 | 84.13 |
| | | Total | 234 | 160.77 | 9.92 | 98.41 |
| | All Grade | Non Sped | 522 | 159.15 | 10.22 | 104.48 |
| | | Sped | 102 | 151.07 | 9.34 | 87.17 |
| | | Total | 624 | 157.83 | 10.51 | 110.45 |
| All Students | 4th Grade | Non Sped | 380 | 155.91 | 10.53 | 110.91 |
| | | Sped | 87 | 149.64 | 10.07 | 101.37 |
| | | Total | 467 | 154.75 | 10.72 | 114.88 |
| | 5th Grade | Non Sped | 99 | 156.53 | 9.43 | 88.82 |
| | | Sped | 12 | 150.25 | 12.03 | 144.75 |
| | | Total | 111 | 155.85 | 9.87 | 97.44 |
| | 6th Grade | Non Sped | 298 | 162.26 | 9.85 | 96.99 |
| | | Sped | 46 | 148.83 | 9.50 | 90.15 |
| | | Total | 344 | 160.46 | 10.81 | 116.76 |
| | All Grade | Non Sped | 777 | 158.42 | 10.57 | 111.69 |
| | | Sped | 145 | 149.43 | 10.00 | 99.97 |
| | | Total | 922 | 157.01 | 10.98 | 120.46 |

Homogeneity of Variance within Demographic Groups – Language Arts

Tables 34 through 45 show the Levene's tests for homogeneity of variance for Language Arts by Race Group, FRL Status, LEP Status and Special Ed. Status. All tests are at the $\alpha=0.05$ level of significance.

Table 34

UPASS 2005 Language Arts scale score, Levene's test for eMINTS Participation by Race Group

| F | df1 | df2 | Sig. |
|-------|-----|------|-------|
| 1.997 | 3 | 1057 | 0.113 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups. Design: Intercept+white_nonwhite+eMINTS+white_nonwhite * eMINTS

Table 35

UPASS 2005 Language Arts scale score, Levene's test for eMINTS Participation by F/R Lunch Status

| F | df1 | df2 | Sig. |
|-------|-----|------|-------|
| 2.283 | 4 | 1056 | 0.059 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups. Design: Intercept+eMINTS+low_income+eMINTS * low_income

Table 36

UPASS 2005 Language Arts scale score, Levene's test for eMINTS Participation by LEP Status

| F | df1 | df2 | Sig. |
|-------|-----|------|-------|
| 2.404 | 3 | 1057 | 0.066 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups. Design: Intercept+eMINTS+LEP+eMINTS * LEP

Table 37

UPASS 2005 Language Arts scale score, Levene's test for eMINTS Participation by Special Ed. Status

| F | df1 | df2 | Sig. |
|-------|-----|------|-------|
| 1.998 | 3 | 1057 | 0.113 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups. Design: Intercept+eMINTS+special_ed+eMINTS * special_ed

The Levene's tests for the independent variables, Race Group, FRL, LEP, and Special Education status, and eMINTs show no statistically significant differences in cell variances. The assumption for homogeneity of variance is met for the four language arts ANOVAs.

Homogeneity of Variance within Demographic Groups – Mathematics

Tables 38 through 41 show the Levene's tests for homogeneity of variance for Mathematics by Race Group, FRL Status, LEP Status and Special Ed. Status. All tests are at the alpha=0.05 level of significance.

Table 38

UPASS 2005 Mathematics scale score, Levene's test for eMINTS Participation by Race Group

| F | df1 | df2 | Sig. |
|-------|-----|------|------|
| 0.755 | 3 | 1055 | 0.52 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups. Design: Intercept+white_nonwhite+eMINTS+white_nonwhite * eMINTS

Table 39

UPASS 2005 Mathematics scale score, Levene's test for eMINTS Participation by F/R Lunch Status

| F | df1 | df2 | Sig. |
|-------|-----|------|-------|
| 1.181 | 3 | 1055 | 0.316 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups. Design: Intercept+eMINTS+low_income+eMINTS * low_income

Table 40

UPASS 2005 Mathematics scale score, Levene's test for eMINTS Participation by LEP Status

| F | df1 | df2 | Sig. |
|-------|-----|------|------|
| 1.438 | 3 | 1055 | 0.23 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups. Design: Intercept+eMINTS+LEP+eMINTS * LEP

Table 41

UPASS 2005 Mathematics scale score, Levene's test for eMINTS Participation by Special Ed. Status

| F | df1 | df2 | Sig. |
|-------|-----|------|-------|
| 1.089 | 3 | 1055 | 0.353 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups. Design: Intercept+eMINTS+special_ed+eMINTS * special_ed

The Levene's tests for the independent variables, Race Group, FRL, LEP, and Special Education status, and eMINTs show no statistically significant differences in cell variances. The assumption for homogeneity of variance is met for the four mathematics ANOVAs.

Homogeneity of Variance within Demographic Groups – Science

Tables 42 through 45 show the Levene's tests for homogeneity of variance for Science by Race Group, FRL Status, LEP Status and Special Ed. Status. All tests are at the alpha=0.05 level of significance.

Table 42

UPASS 2005 Science scale score, Levene's test for eMINTS Participation by Race Group

| F | df1 | df2 | Sig. |
|-------|-----|-----|-------|
| 1.078 | 3 | 918 | 0.357 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups. Design: Intercept+white_nonwhite+eMINTS+white_nonwhite * eMINTS

Table 43

UPASS 2005 Science scale score, Levene's test for eMINTS Participation by F/R Lunch Status

| F | df1 | df2 | Sig. |
|-------|-----|-----|-------|
| 2.892 | 3 | 918 | 0.034 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups. Design: Intercept+eMINTS+low_income+eMINTS * low_income

Table 44

UPASS 2005 Science scale score, Levene's test for eMINTS Participation by LEP Status.

| F | df1 | df2 | Sig. |
|-------|-----|-----|-------|
| 1.313 | 3 | 918 | 0.269 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups. Design: Intercept+eMINTS+LEP+eMINTS * LEP

Table 45

UPASS 2005 Science scale score, Levene's test for eMINTS Participation by Special Ed. Status

| F | df1 | df2 | Sig. |
|-------|-----|-----|-------|
| 1.041 | 3 | 918 | 0.374 |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups. Design: Intercept+eMINTS+special_ed+eMINTS * special_ed

The Levene's tests for three of the independent variables and eMINTs show that there are no statistically significant differences in cell variances for Special Ed., LEP Status and Race Group. The assumption for homogeneity of variance is met for these three Science ANOVAs. The Levene's test for FRL Status is statistically significant, therefore the assumption for homogeneity of variance is not met for this Science ANOVA (as indicated in Table 21).

Two-Way Analysis Of Variance Results

Tables 46 through 53 show the results for 2-way ANOVA models that met the assumptions for this test. All tests are at the $\alpha=0.05$ level of significance.

Table 46
UPASS 2005 Language Arts scale score (dependent variable), 2-way ANOVA for eMINTS Participation by Race Group

| Source | Type III SS | df | Mean Square | F | Sig. |
|-------------------------|--------------|------|--------------|------------|-------|
| Corrected Model | 11959.134 | 3 | 3986.378 | 36.874 | 0.000 |
| Intercept | 24646704.947 | 1 | 24646704.947 | 227980.713 | 0.000 |
| white_nonwhite | 10798.635 | 1 | 10798.635 | 99.887 | 0.000 |
| eMINTS | 84.036 | 1 | 84.036 | 0.777 | 0.378 |
| white_nonwhite * eMINTS | 154.826 | 1 | 154.826 | 1.432 | 0.232 |
| Error | 114270.926 | 1057 | 108.109 | | |
| Total | 27704778.000 | 1061 | | | |
| Corrected Total | 126230.060 | 1060 | | | |

The main effect of Race Group is statistically significant. The main effect of eMINTs Participation is not statistically significant. The multiple R-squared for this model is 0.092, which indicates that eMINTs Participation and Race Group *together* explain 9.2% of the variance in UPASS Language Arts scale scores. The interaction between eMINTs Participation and Race Group has no statistically significant effect on UPASS Language Arts scale scores.

Table 47
UPASS 2005 Language Arts scale score (dependent variable), 2-way ANOVA for eMINTS Participation by F/R Lunch Status

| Source | Type III SS | df | Mean Square | F | Sig. |
|--------------------|--------------|------|-------------|----------|-------|
| Corrected Model | 7212.978 | 4 | 1803.244 | 16.000 | 0.000 |
| Intercept | 388934.676 | 1 | 388934.676 | 3450.891 | 0.000 |
| eMINTS | 122.415 | 1 | 122.415 | 1.086 | 0.298 |
| F/R Lunch | 5599.485 | 2 | 2799.743 | 24.841 | 0.000 |
| eMINTS * F/R Lunch | 185.620 | 1 | 185.620 | 1.647 | 0.200 |
| Error | 119017.083 | 1056 | 112.706 | | |
| Total | 27704778.000 | 1061 | | | |
| Corrected Total | 126230.060 | 1060 | | | |

The main effect of F/R Lunch Status is statistically significant. The main effect of eMINTs Participation is not statistically significant. The multiple R-squared for this model is 0.054, which indicates that eMINTs Participation and F/R Lunch Status *together* explain 5.4% of the variance in UPASS Language Arts scale scores. The interaction between eMINTs Participation and F/R Lunch Status has no statistically significant effect on UPASS Language Arts scale scores.

Table 48

UPASS 2005 Language Arts scale score (dependent variable), 2-way ANOVA for eMINTS Participation by LEP Status

| Source | Type III SS | df | Mean Square | F | Sig. |
|-----------------|--------------|------|--------------|------------|-------|
| Corrected Model | 8882.008 | 3 | 2960.669 | 26.668 | 0.000 |
| Intercept | 21520662.616 | 1 | 21520662.616 | 193845.060 | 0.000 |
| eMINTS | 93.891 | 1 | 93.891 | 0.846 | 0.358 |
| LEP | 7934.602 | 1 | 7934.602 | 71.470 | 0.000 |
| eMINTS * LEP | 391.416 | 1 | 391.416 | 3.526 | 0.061 |
| Error | 117348.053 | 1057 | 111.020 | | |
| Total | 27704778.000 | 1061 | | | |
| Corrected Total | 126230.060 | 1060 | | | |

The main effect of LEP Status is statistically significant. The main effect of eMINTs Participation is not statistically significant. The multiple R-squared for this model is 0.068, which indicates that eMINTs Participation and LEP Status *together* explain 6.8% of the variance in UPASS Language Arts scale scores. The interaction between eMINTs Participation and LEP Status has no statistically significant effect on UPASS Language Arts scale scores.

Table 49

UPASS 2005 Language Arts scale score (dependent variable), 2-way ANOVA for eMINTS Participation by Special Ed. Status

| Source | Type III SS | df | Mean Square | F | Sig. |
|---------------------|--------------|------|--------------|------------|-------|
| Corrected Model | 14902.788 | 3 | 4967.596 | 47.165 | 0.000 |
| Intercept | 13288521.893 | 1 | 13288521.893 | 126168.254 | 0.000 |
| eMINTS | 25.749 | 1 | 25.749 | 0.244 | 0.621 |
| special_ed | 11740.051 | 1 | 11740.051 | 111.466 | 0.000 |
| eMINTS * special_ed | 565.273 | 1 | 565.273 | 5.367 | 0.021 |
| Error | 111327.273 | 1057 | 105.324 | | |
| Total | 27704778.000 | 1061 | | | |
| Corrected Total | 126230.060 | 1060 | | | |

The main effect of Special Education Status is statistically significant. The main effect of eMINTs Participation is not statistically significant. The multiple R-squared for this model is 0.116, which indicates that eMINTs Participation and Special Ed. Status *together* explain 11.6% of the variance in UPASS Language Arts scale scores. The interaction between eMINTs Participation and Special Ed. Status has a statistically significant effect on UPASS Language Arts scale scores, which means that eMINTs Participation has a statistically different effect on Language Arts scale scores, depending on Special Ed. Status.

Table 50**UPASS 2005 Mathematics scale score (dependent variable), 2-way ANOVA for eMINTS Participation by Race Group**

| Source | Type III SS | df | Mean Square | F | Sig. |
|--------------------------|--------------|------|--------------|------------|-------|
| Corrected Model | 6281.300(a) | 3 | 2093.767 | 19.172 | 0.000 |
| Intercept | 24443493.449 | 1 | 24443493.449 | 223821.662 | 0.000 |
| white_non_white | 4891.768 | 1 | 4891.768 | 44.792 | 0.000 |
| eMINTS | 590.258 | 1 | 590.258 | 5.405 | 0.020 |
| white_non_white * eMINTS | 648.565 | 1 | 648.565 | 5.939 | 0.015 |
| Error | 115216.219 | 1055 | 109.210 | | |
| Total | 27382827.000 | 1059 | | | |
| Corrected Total | 121497.518 | 1058 | | | |

The main effect of Race Group is statistically significant. The main effect of eMINTs Participation is also statistically significant. The multiple R-squared for this model is 0.049, which indicates that eMINTs Participation and Race Group *together* explain 4.9% of the variance in UPASS Mathematics scale scores. The interaction between eMINTs Participation and Race Group has a statistically significant effect on UPASS Language Arts scale scores, which means that eMINTs Participation has a statistically different effect on Mathematics scale scores, depending on Race Group.

Table 51**UPASS 2005 Mathematics scale score (dependent variable), 2-way ANOVA for eMINTS Participation by F/R Lunch Status**

| Source | Type III SS | df | Mean Square | F | Sig. |
|---------------------------|--------------|------|--------------|------------|-------|
| Corrected Model | 5499.693 | 3 | 1833.231 | 16.673 | 0.000 |
| Intercept | 21627323.196 | 1 | 21627323.196 | 196700.463 | 0.000 |
| eMINTS | 474.402 | 1 | 474.402 | 4.315 | 0.038 |
| F/R Lunch Status | 4235.178 | 1 | 4235.178 | 38.519 | 0.000 |
| eMINTS * F/R Lunch Status | 163.242 | 1 | 163.242 | 1.485 | 0.223 |
| Error | 115997.825 | 1055 | 109.951 | | |
| Total | 27382827.000 | 1059 | | | |
| Corrected Total | 121497.518 | 1058 | | | |

The main effect of F/R Lunch Status is statistically significant. The main effect of eMINTs Participation is also statistically significant. The multiple R-squared for this model is 0.043, which indicates that eMINTs Participation and F/R Lunch Status *together* explain 4.3% of the variance in UPASS Mathematics scale scores. The interaction between eMINTs Participation and F/R Lunch Status has no statistically significant effect on UPASS Mathematics scale scores.

Table 52

UPASS 2005 Mathematics scale score (dependent variable), 2-way ANOVA for eMINTS Participation by LEP Status

| Source | Type III SS | df | Mean Square | F | Sig. |
|-----------------|--------------|------|--------------|------------|-------|
| Corrected Model | 4447.551 | 3 | 1482.517 | 13.362 | 0.000 |
| Intercept | 21320144.595 | 1 | 21320144.595 | 192163.680 | 0.000 |
| eMINTS | 953.973 | 1 | 953.973 | 8.598 | 0.003 |
| LEP | 3016.703 | 1 | 3016.703 | 27.190 | 0.000 |
| eMINTS * LEP | 382.350 | 1 | 382.350 | 3.446 | 0.064 |
| Error | 117049.968 | 1055 | 110.948 | | |
| Total | 27382827.000 | 1059 | | | |
| Corrected Total | 121497.518 | 1058 | | | |

The main effect of LEP Status is statistically significant. The main effect of eMINTs Participation is also statistically significant. The multiple R-squared for this model is 0.034, which indicates that eMINTs Participation and LEP Status *together* explain 3.4% of the variance in UPASS Mathematics scale scores. The interaction between eMINTs Participation and LEP Status has a statistically significant effect on UPASS Mathematics scale scores, which means that eMINTs Participation has a statistically different effect on Mathematics scale scores, depending on LEP Status.

Table 53

UPASS 2005 Mathematics scale score (dependent variable), 2-way ANOVA for eMINTS Participation by Special Ed. Status

| Source | Type III SS | df | Mean Square | F | Sig. |
|---------------------|--------------|------|--------------|------------|-------|
| Corrected Model | 15315.773(a) | 3 | 5105.258 | 50.725 | 0.000 |
| Intercept | 13161485.130 | 1 | 13161485.130 | 130769.812 | 0.000 |
| eMINTS | 890.689 | 1 | 890.689 | 8.850 | 0.003 |
| special_ed | 13422.276 | 1 | 13422.276 | 133.361 | 0.000 |
| eMINTS * special_ed | 21.768 | 1 | 21.768 | 0.216 | 0.642 |
| Error | 106181.745 | 1055 | 100.646 | | |
| Total | 27382827.000 | 1059 | | | |
| Corrected Total | 121497.518 | 1058 | | | |

The main effect of Special Ed. Status is statistically significant. The main effect of eMINTs Participation is also statistically significant. The multiple R-squared for this model is 0.124, which indicates that eMINTs Participation and Special Ed. Status *together* explain 12.4% of the variance in UPASS Mathematics scale scores. The interaction between eMINTs Participation and Special Ed. Status has no statistically significant effect on UPASS Mathematics scale scores.

Table 54**UPASS 2005 Science scale score (dependent variable), 2-way ANOVA for eMINTS Participation by Race Group**

| Source | Type III SS | df | Mean Square | F | Sig. |
|--------------------------|--------------|-----|--------------|------------|-------|
| Corrected Model | 13429.768 | 3 | 4476.589 | 42.145 | 0.000 |
| Intercept | 18311509.130 | 1 | 18311509.130 | 172393.734 | 0.000 |
| white_non_white | 11843.332 | 1 | 11843.332 | 111.499 | 0.000 |
| eMINTS | 844.825 | 1 | 844.825 | 7.954 | 0.005 |
| white_non_white * eMINTS | 289.990 | 1 | 289.990 | 2.730 | 0.099 |
| Error | 97509.144 | 918 | 106.219 | | |
| Total | 22840143.000 | 922 | | | |
| Corrected Total | 110938.912 | 921 | | | |

The main effect of Race Group is statistically significant. The main effect of eMINTs Participation is also statistically significant. The multiple R-squared for this model is 0.118, which indicates that eMINTs Participation and Race Group *together* explain 11.8% of the variance in UPASS Science scale scores. The interaction between eMINTs Participation and Race Group has no statistically significant effect on UPASS Science scale scores.

Two-way ANOVA tests for Science by eMINTS by F/R Lunch Status and for Science by eMINTS by LEP Status are omitted here because the data did not meet the assumptions for ANOVA tests.

Table 55**UPASS 2005 Science scale score (dependent variable), 2-way ANOVA for eMINTS Participation by Special Ed. Status**

| Source | Type III SS | df | Mean Square | F | Sig. |
|---------------------|--------------|-----|-------------|-----------|-------|
| Corrected Model | 11630.447 | 3 | 3876.816 | 35.837 | 0.000 |
| Intercept | 9651583.496 | 1 | 9651583.496 | 89218.514 | 0.000 |
| eMINTS | 1533.266 | 1 | 1533.266 | 14.173 | 0.000 |
| special_ed | 9735.663 | 1 | 9735.663 | 89.996 | 0.000 |
| eMINTS * special_ed | 279.685 | 1 | 279.685 | 2.585 | 0.108 |
| Error | 99308.465 | 918 | 108.179 | | |
| Total | 22840143.000 | 922 | | | |
| Corrected Total | 110938.912 | 921 | | | |

The main effect of Special Ed. Status is statistically significant. The main effect of eMINTs Participation is also statistically significant. The multiple R-squared for this model is 0.102, which indicates that eMINTs Participation and Special Ed. *together* explain 10.2% of the variance in UPASS Mathematics scale scores. The interaction between eMINTs Participation and Special Ed. has a statistically significant effect on UPASS Science scale scores, which means that eMINTs Participation has a statistically different effect on Science scale scores, depending on LEP Status.

Conclusions

In Title I buildings participating in the eMINTS-4-Utah initiative, a greater percentage of 4th – 6th grade students enrolled in eMINTS classrooms scored at proficient levels on the UPASS CRT tests for language arts, mathematics, and science than did 4th- 6th grade students in non-eMINTS classrooms (Tables 5, 10, 15 – ‘All Grades’). Further examination across grades revealed that eMINTS students with ethnic minority status (Table 11), free and reduced lunch status (Table 12), and limited English proficiency status (Table 13) were more likely to score at proficient levels on the mathematics test than their non-eMINTS peers.

When considered by grade level, a significantly greater proportion of 4th grade ethnic minority students (Table 11) enrolled in eMINTS classrooms scored at proficient levels on the math test than did non-eMINTS ethnic minority students; as did a greater proportion of eMINTS students with FRL status (Table 12) and special education status (Table 14). These findings also apply to 4th grade ethnic minority (Table 16) and FRL (Table 17) eMINTS students on the UPASS science test.

These results reflect the effect of eMINTS-4-Utah at the point in time when the first cohort of eMINTS teachers completed their professional development. Additional formative and summative evaluation will be necessary to gauge the continuing effects of eMINTS-4-Utah both in terms of measuring differences in eMINTS and non-eMINTS classrooms as well as longitudinal analyses of the effects of eMINTS participation on individual students as they progress.